Chhetri Academy

chhetriacademy.com

GCSE MATHS

Ratio, proportion and rates of change

Edexcel 1MA1 | Subtopic collection Topic 31

Ratio

Foundation tier

Answers and examiner comments

71	2011-2025	Foundation
question groups	available papers	tier

Using this booklet

1. Answer numbers match the companion question booklet.
2. Follow the original question number on marking tables.
3. Examiner comments are included where available.

Name _____ **Date** _____

Some entries use full source marking material in an appendix. Any unavailable mark schemes are identified beside the relevant answer.

Original question 17

The full source mark scheme begins on page 103. Use the original paper code, tier and question number shown above.

9	(a)		0.25	1	B1 cao
	(b)		80%	1	B1 cao
	(c)		1:3	1	B1 cao

Question		Working	Answer	Mark	Notes
15		60 ÷ 12 = 5 2×5=10; 3×5=15; 7×5=35	10 15 35	3	M1 for 60 ÷ (2+3+7) or ×5 or multiple build-up (at least 4 correct) eg 2:3:7, 4:6:14 ,6:12:28, 8:12:28 M1 for 60÷(2+3+7) ×2 or 60÷(2+3+7) ×3 or 60÷(2+3+7) ×7 or sight of the numbers 10,15,35 together or 2×5 or 3×5 or 7×5 A1 cao SC: B1 for 2 correct numbers out of 3 in a ratio

9	(a)	$\frac{15}{100} \times 240$	36	2	M1 for 15 ÷ 100 or 10% + 5% attempted with correct values of 24 and 12 seen or 24 and 12 seen or 0.15 seen A1 cao
	(b)	240 ÷ 3	80	1	B1 cao
	(c)	80 : 60 = 8 : 6	4 : 3	2	M1 for any correct ratio eg 80:60, 40 : 30, 8 : 6 or 4 gap 3 seen without ratio sign or 4 dot 3 A1 for 4 : 3 or 4 to 3 **SC** B1 for an answer of 3:4 or 3 to 4 if M1 not scored

5MB2F_01

<table>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>22</td><td></td><td>45 ÷ (5 – 2) (=15)
‘15’×2

OR
$45 \times \frac{2}{3}$

OR
<table>
<tr><th>P</th><th>J</th><th>T</th><th>D</th></tr>
<tr><td>2</td><td>5</td><td>7</td><td>3</td></tr>
<tr><td>4</td><td>10</td><td>14</td><td>6</td></tr>
<tr><td>6</td><td>15</td><td>21</td><td>9</td></tr>
<tr><td>8</td><td>20</td><td>28</td><td>12</td></tr>
<tr><td>10</td><td>25</td><td>35</td><td>15</td></tr>
<tr><td>12</td><td>30</td><td>42</td><td>18</td></tr>
<tr><td>14</td><td>35</td><td>49</td><td>21</td></tr>
<tr><td>16</td><td>40</td><td>56</td><td>24</td></tr>
<tr><td>18</td><td>45</td><td>63</td><td>27</td></tr>
<tr><td>20</td><td>50</td><td>70</td><td>30</td></tr>
<tr><td>22</td><td>55</td><td>77</td><td>33</td></tr>
<tr><td>24</td><td>60</td><td>84</td><td>36</td></tr>
<tr><td>26</td><td>65</td><td>91</td><td>39</td></tr>
<tr><td>28</td><td>70</td><td>98</td><td>42</td></tr>
<tr><td>30</td><td>75</td><td>105</td><td>45</td></tr>
</table>
</td><td>30</td><td>3</td><td>M1 for 45 ÷ (5 – 2)
M1 for ‘15’×2
A1 cao for 30

OR
M2 for $45 \times \frac{2}{3}$ oe
(M1 for $45 \times \frac{1}{3}$)
A1 cao for 30

OR
M1 for (2, 5); 4, 10; 6, 15; 8, 20
M1 for a completly correct list up to 30, 75
A1 cao
(SC If M0 then B1 for 18 given as the answer)</td></tr>
</table>

1MA0_2F

Original question 29

The full source mark scheme begins on page 118. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
23			240	4	M1 for 16 × 2 (= 32 girls) M1 for 16 + '16 × 2' (= 48) M1 (dep on the previous M1) for (16 + '32') × 5 **or** (16 + '32') × (4 + 1) A1 cao OR M1 for 1 : 2 = 3 parts M1 for 5 schools × 3 parts (= 15 parts) M1 (dep on the previous M1) for '15' parts × 16 A1 cao **SC B2** for 176 given on the answer line

Original question 25

The full source mark scheme begins on page 136. Use the original paper code, tier and question number shown above.

Original question 24

The full source mark scheme begins on page 156. Use the original paper code, tier and question number shown above.

Original question 13

The full source mark scheme begins on page 174. Use the original paper code, tier and question number shown above.

Paper: 5MB2F_01

Question		Working	Answer	Mark	Notes
7	(a)		Twenty thousand and four hundred	1	B1 cao
	(b)		–21	1	B1 cao
	(c)		27	1	B1 cao
	(d)		16	1	B1 cao
	(e)		5	1	B1 cao
	(f)		1:3	1	B1 cao

Paper: 5MB2F_01

14	(a)		3:1	2	M1 for 48 : 16 or 24 : 8 or 12 : 4 or 6 : 2 or 1 : 3 A1 cao
	(b)		3:2	2	M1 for 48 ×2 (= 96) or 16 × 4 (=64) or answer given as 2 : 3 oe A1 for 3 : 2 oe or M1 for “3” × 2 or 6 stated and “1” × 4 or 4 stated or answer given as 2 : 3 oe A1 for 3 : 2 oe

19	3000 ÷ 20 = 150 150 ÷ (14+1) = 10 10 ÷ 0.5 = 20 20 × 3.99	79.80	4	M1 for 3000 ÷ 20 (=150) M1 (dep) for correct use of ratio M1(dep on M1, M1) for total cost of bottles A1 for 79.8(0)

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q2	(a)	Triangle has been enlarged.	B1 cao
Q2	(b)(ii)	Model provided for all candidates. Also a diagram provided for MLP. Diagram has been enlarged.	B1 cao
Q2	(b)(ii)	Model provided for all candidates. Also a diagram provided for MLP. Diagram has been enlarged.	B1 cao

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q3	(a)	Diagram has been enlarged.	B1 for 6 sectors shaded
Q3	(b)	Diagram has been enlarged.	M1 for 1 ÷ 3 (=0.33…) C1 for correct statement and 0.33(…) **OR** M1 for $\frac{3\times3}{10\times3}$ and $\frac{1\times10}{3\times10}$ C1 for correct statement and $\frac{9}{30}$ and $\frac{10}{30}$ **OR** M1 for $\frac{1\times3}{3\times3}$ C1 for correct statement and $\frac{3}{9}$ and $\frac{3}{10}$ **OR** M1 for e.g. $\frac{1}{3}\times 30$ (=10) and 0.3×30 (=9) C1 for correct statement and e.g. 10 and 9
Q5	(a)	Grid has been enlarged. Wording is added: “Each square represents a one centimetre square”.	B1 cao
Q5	(b)	Grid has been enlarged. Wording is added: “Each square represents a one centimetre square”.	M1 for drawing a rectangle (accept square) A1 for correct area
Q7	(a)	Diagram has been enlarged.	B1 cao
Q7	(b)	Diagram has been enlarged.	B1 cao
Q7	(c)	Diagram has been enlarged.	B1 cao

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q8	(a)	Grid has been enlarged.	B1 cao
Q8	(b)	Grid has been enlarged.	B1 cao
Q8	(c)	Grid has been enlarged.	B1 cao
Q12	(a)	MLP *a* changed to x. *b* changed to *y*.	B1 for *xy* oe
Q12	(b)	MLP *x* changed to *y*.	B1 for $3y^2$ oe
Q12	(c)	MLP *x* changed to *e* *y* changed to *f*	M1 for $3e + e$ (=$4e$) or $-2f - 3f$(= $-5f$) A1 cao
Q13		Model provided for all candidates. Also diagram provided for MLP. Diagram has been enlarged	M1 for $120 \div (5 \times 8)$ oe A1 cao
Q14		Grid has been enlarged. Right axis labelled.	M1 for converting ft to m or m to ft M1 (dep) for difference in heights in consistent units A1 for 185 – 210 feet or 55 – 63 metres

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q15		Diagram has been enlarged. Wording added: "Angle EBA is marked *x*".	M1 for (CED=) 35 M1 for (EBD=) 180–(50+35+35) (=60) A1 for *x* = 120 oe C1 (dep on M1) for two of 1. base angles of isosceles triangle equal 2. angles in triangle add to 180 3. angles on straight line add to 180 **OR** M1 for (CED=) 35 or (ECD=) 110 M1 for (EBD=) 110–50 (=60) A1 for *x* = 120 oe C1 (dep on M1) for two of 1. base angles of isosceles triangle are equal 2. exterior angle of triangle equals sum of interior opposite angles 3. angles on straight line add to 180 **OR** M1 for (CED=) 35 M1 for (ECA=) 35+35 (=70) or 50 + 'ECD' A1 for *x* = 120 oe C1 (dep on M1) for both of 1. exterior angle of triangle equals sum of interior opposite angles 2. base angles of isosceles triangle are equal

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q16		Diagrams have been removed.	M1 for 40÷50 (= 0.8) or 90÷120 (= 0.75) OR 50÷40 (=1.25) or 120÷90 (= 1.33…) OR appropriate calculation that could lead to a comparative figure, e.g. 9 × 50 (=450) or 4 × 120 (=480) M1 for method to compare figures for both boxes, e.g. 40÷50 (= 0.8) and 90÷120 (= 0.75) C1 for correct comparative figures for both boxes leading to a correct comparison, e.g. 0.8 and 0.75 and large (box) or 120 paperclip (box) or 90p (box)
Q17	(a)		M1 for correct expression with at least one factor extracted or 6*xy* (linear expression in *y*) A1 cao
Q17	(b)		B1 cao
Q17	(c)	MLP and Braille: a changed to *x*.	B1 cao

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q18		Diagram has been enlarged. 9 metres moved to top of diagram 4.5 metres moved to the left of diagram.	M1 for 9 ÷ 0.1 (=90) or 4.5 ÷ 1.5 (=3) oe M1 for '3'× '90' oe (=270) A1 cao **OR** M1 for 4.5 ÷ 0.1 (=45) or 9 ÷ 1.5 (=6) oe M1 for '6'× '45'oe (=270) A1 cao **OR** M1 for 9 × 4.5 (=40.5) or 1.5 × 0.1(=0.15) oe M1 for '40.5' ÷ '0.15' (=270) A1 cao

21	(a)		2:3	1	B1 cao
	(b)		$\frac{3}{5}$	2	M1 ft for adding the numbers in their ratio to get an acceptable total AND using this as their denominator eg 4 + 6 = 10 or 2 + 3 = 5 A1ft $\frac{3}{5}$ oe

PAPER: 1MA0_2F

Original question 18

The full source mark scheme begins on page 187. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
19 (a)		$\frac{1}{6}$	1	B1 cao
(b)		4	2	M1 for 20 ÷ 5 (=4) Allow build up method to 4 lots of 1:5 A1 cao
(c)		6	2	M1 for a full method to find the number of red counters needed eg 20 ÷ 2 – "4" A1 ft from (b)

Question	Working	Answer	Mark	Notes
26		6 : 5	4	M1 for $\frac{2}{3} \times 165$ oe (= 110) [black counters] M1 (dep M1) for $\frac{40}{100} \times$ "110" oe (=44) [where 110 is their black counters] M1 (dep M2) for (110 − "44") : 55 or 66 : 55 or a reversed ratio A1 cao OR M1 for 2 : 1 M1 for 2 × "1 − 0.4" or 1.2 M1 (dep M2) for "1.2" : 1 A1 cao OR M1 for correct method to find proportion of black counters left in the bag eg $\frac{60}{100} \times \frac{2}{3}$ $(= \frac{120}{300})$ M1 for correct method to find proportion of white counters in the bag ie $\frac{1}{3}$ oe M1 (dep M2) for correct method to find ratio after eg "$\frac{120}{300}$" : "$\frac{1}{3}$" A1 cao

PAPER: 1MA0/2F

10	(a)		4 : 3	2	M1 for 20 : 15 or 3 : 4 A1 cao
	(b)		$35 - x - y$	2	M1 for $20 - x$ or $15 - y$ A1 for $20 - x + 15 - y$ oe

Question	Working	Answer	Mark	Notes	Type
17		74	4	M1 for $200 - \frac{10}{100} \times 200$ (=180) M1 for "180" ÷ (1 + 2 + 7) (= 18) M1 for "18" × (1 + 2) + 20 A1 cao OR M1 for $200 - \frac{10}{100} \times 200$ (=180) M1 for $\frac{70}{100} \times 180$ (=126) M1 for 180 – '126' + 20 A1 cao	E

Question	Working	Answer	Mark	Notes
22 (a)		40, 100	3	M1 method to find unit weight e.g. 60 ÷ 3 (= 20) M1 for complete method to find weight of **one** of the other ingredients e.g "20" × 2 (= 40) **or** "20" × 5 (= 100) A1 cao
(b)		1.44	3	M1 for a complete method to work out the weight of nuts needed e.g. 300 ÷ (3 + 2 + 5) × 3 (= 90) **or** 300 ÷ (60 + "40" + "100") × 60 (= 90) M1 for a complete method to work out the cost eg (800 ÷ 500) × "90" (= 144) A1 cao

10		1 : 10	M1 A1	for 12 : (20 × 6) oe **or** 10 : 1 **or** 1 with 10 in incorrect notation cao

Paper: 1MA1/1F

Original question 18

The full source mark scheme begins on page 200. Use the original paper code, tier and question number shown above.

5	(a)		1 : 3	B1	oe
	(b)		42	M1 A1	ft 56 ÷ 4 (= 14) or complete method to find number of grey tiles eg 56 – (56 ÷ 4), 56 ÷ 4 × 3 oe (= 42) for 42 or ft

Paper: 1MA1/3F

Question	Working	Answer	Mark	Notes
10		75	P1 P1 A1	for 90 ÷ 6 (= 15) or for connecting *AB* and *BC* by ratio or proportion eg 5 and 1 on the diagram for a complete method to find the length *AB* eg 90 ÷ 6 × 5 (= 75) cao

Question	Working	Answer	Mark	Notes
18		68	P1	for a process to find the number of vanilla cakes, eg 420 × 2 ÷ 7 oe (= 120)
			P1	for a process to find the number of banana cakes, eg 420 × 0.35 oe (= 147)
			P1	(dep P1) for a full process to find the number of lemon/chocolate cakes eg 420 – (vanilla cakes) – (banana cakes) (= 153)
			P1	(dep on previous P1) for a process to find the number of lemon cakes eg "153" ÷ 9 × 4 oe (= 68)
			A1	cao
				OR
			P1	for writing two proportions in the same format
			P1	for combining the proportions of vanilla and banana cakes eg 2/7 + 7/20 (= 89/140)
			P1	(dep P1) for a full process to find the proportion or number of lemon/chocolate cakes eg 1 – "89/140" (= 51/140)
			P1	(dep on previous P1) for a process to find the number of lemon cakes eg "51/140" × 420 ÷ 9 × 4 (= 68)
			A1	cao

15		45	M1 A1	for a correct first step eg $\frac{9}{7+4+9}$ ($=\frac{9}{20}$) **or** $\frac{100}{7+4+9}$ (=5) **or** a full method for one of the other colours cao

Paper 1MA1: 1F

18		135	M1 A1	for 450 ÷ "2+3+5" (=45) **or** $\frac{3}{10}$ × 450 (=135) **or** 5 parts are 225 **or** 2 parts are 90 indicated Cao

Paper 1MA1: 1F

24		14:21:42	P1 P1 P1 A1	for 2 out of 3 expressions in one letter eg from x, $x+7$ $2x+14$ **or** see a set of numbers to show interpretation of the relationships, eg 10, 17, 34 (dep) for sum of their 3 expressions =77 eg $x + x+7+2x+14 =77$ oe **or** 2 systematic correct trials including addition for a correct process to isolate their term in x **or** $x=14$ for ratio 14:21:42 oe

Paper 1MA1: 1F

6 (a)		$\frac{3}{7}$	B1	for $\frac{3}{7}$ or equivalent fraction
(b)		3 : 1	B1	for 3 : 1 or equivalent ratio

Paper: 1MA1/2F

Question	Working	Answer	Mark	Notes
11		5 : 2 : 10	P1	for process to calculate total for quiz or total of membership fees eg. 13 × 5 + 35 (=100), 25 × 20 (=500)
			P1	for complete process to write (correct) figures as a ratio, eg 250 : 100 : 500 oe in any order (condone inclusion of units or words)
			A1	cao

15		(£6), 18, 24, 27 15, 45, 60, 67.50	M1 M1 A1	demonstrates a proportional method to find at least one cost for cotton, eg. £6 ÷ 2 × 9 (= (£)27) or a correct entry in the table. demonstrates a proportional method to find at least one cost for silk, eg. £6 ÷ 2 × 5 (= (£)15) or a correct entry in the table. for a fully correct table (accept 67.5(0))

Paper: 1MA1/3F

22		15	P1 P1 A1	strategy to start the problem, eg $8:20$ and $20:5$ process to solve the problem, eg $\frac{5}{33}\times 100$ or $24:60:15$ cao

16	(a)	14	M1	for 4×5 and 3×-2, the substitution may be seen in two separate calculations, eg 4×5 (= 20) and 3×-2 (= −6)	
			A1	cao	
	(b)	$4e^2 + 8e$	B2	for $4e^2 + 8e$	
			(B1	for $4e^2$ or $8e$)	Note: $4e^2 + 8e = 12e^3$ for example gets B1 only
	(c)	11	M1	for a correct first step eg $3 \times m - 3 \times 4 = 21$ oe **or** $m - 4 = 21 \div 3$ (= 7) oe	Showing ÷3 by each side of equation is sufficient
			A1	cao	
17		1 : 3	M1	for $\frac{1}{4} : \frac{3}{4}$ oe **OR** for any correct un-simplified ratio, eg 25 : 75	
			A1	cao SC: B1 for an answer of 3 : 1 or 1 : $\frac{1}{3}$ if M0 scored	Ignore 'units' such as 1 nuts : 3 no nuts 1 : 3*n* gets M1A0

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
20	140	P1	for beginning to solve the problem eg 50 ÷ 5 × 8 (= 80) **or** 14 : 8 : 5 oe **or** 14 : 8 and 8 : 5 oe (linked)	80 may be seen in the ratio 80 : 50
		P1	for a full process to solve the problem eg "80" ÷ 4 × 7 **or** $\frac{50}{5}$ × "14" **or** 140 : 80 : 50	
		A1	cao	If 140 clearly identified as houses in working award full marks

Question		Answer	Mark	Mark scheme	Additional guidance
23		3 : 5	P1	for process to find 20% **or** 120% of the cost, eg 8500 × 0.2 (= 1700) oe **or** 8500 × 1.2 (= 10 200) oe	When partitioning all figures quoted must be correct or a full method shown eg 10% = 8500 ÷ 10 (=850) and 20% = "850" + "850" (=1700)
			P1	for process to find total cost of payments, eg 12 × 531.25 (= 6375)	
			P1	for complete process to find value of deposit, eg "10 200" – "6375" (= 3825) **or** 8500 – "6375" (=2125) **and** "2125" + "1700" (=3825) **OR** the deposit as a proportion of the total cost, eg $1 - \frac{"6375"}{"10200"}$ $(=\frac{3}{8})$	May be seen as a fraction of the total eg $\frac{3825}{10200}$ $(=\frac{3}{8})$
			P1	for finding a correct un-simplified ratio, eg "3825" : "6375" oe **or** 5:3 **or** $1.\dot{6} : 1$ **or** $\frac{5}{3} : 1$	Figures at this stage must be expressed as part of a ratio eg 51:85, $\frac{3}{8} : \frac{5}{8}$
			A1	Accept $1 : 1.\dot{6}$, $1 : \frac{5}{3}$	Ignore consistent units

Question	Answer	Mark	Mark scheme	Additional guidance
16 (a)	10	M1	for a start of method to find Bispah's share, eg 2.50×8 (= 20) **or** $\frac{1}{2} \div \frac{1}{8}$ (= 4)	
		A1	cao	Accept 10.00
(b)	1 : 3	P1	for a process to find Chan's share, eg "20" – 2.5 – [Bispah's money] (=7.5) **or** $1 - \frac{1}{8} - \frac{1}{2}$ (= $\frac{3}{8}$)	Accept working in pence, or in £ given as a decimal oe NB: award this mark if the working is seen in part (a)
		P1	for a correct ratio eg 2.5 : "7.5" **or** $\frac{1}{8}$: "$\frac{3}{8}$" **or** 3 : 1 oe	Accept 3:1 (correct answer in reverse order) which can also be an equivalent ratio to 3:1
		A1	for 1 : 3 oe eg 5 : 15	Award full marks for 1 : 3 or an equivalent ratio. If an equivalent ratio to 1:3 is shown and then simplified incorrectly award full marks.

13	4 : 1 : 2	M1	for start to express the statements as a ratio eg 4 : 1, 1 : 4, 1 : 2 or 2 : 1 with clear and correct link to Azmol, Ryan, Kim **OR** as algebraic expressions, two of $4x$, x and $2x$ eg $4x : x$, $1x : 4x$, $1x : 2x$ or $2x : 1x$ with clear and correct link to Azmol, Ryan, Kim	Allow any equivalent ratio, integers only May be seen as part of an incorrect answer. May be seen as integer multiples of these algebraic expressions. Any letter may be used.
		A1	4 : 1 : 2 oe	Accept 8 : 2 : 4 or equivalent ratios involving integers
		(SCB1	3 integer numbers in correct ratio but no ratio notation, eg 4, 1, 2 or 20, 5, 10)	

Question	Answer	Mark	Mark scheme	Additional guidance
15 (a)	420	P1	starts process, eg 300 ÷ 5 (= 60) **or** 200 ÷ 2 (= 100) **OR** builds up ratio to at least 300 ml orange juice with one error	
		P1	complete process, eg "60" × 5 + "60" × 2 or 300 : 120	May be seen as "60" × 7 "60" must come from correct method
		A1	cao	
(b)	explanation	C1	explains that it will have no effect with reason, eg because he only needs 120 m*l* of lemonade because he has no more orange juice to use	

16	30:1	M1 A1	for stating 450 : 15 oe **or** 450 ÷ 15 (=30) oe **or** 1 : 30 cao	90 : 3 Ignore units throughout.

27	96	P1 P1 P1 A1	for process to find the ratio of the number of pens of each colour sold, eg $2 \times 7 : 5 \times 3 : 6 \times 4$ (= 14 : 15 : 24) for process to find the proportion of green pens sold, eg $\frac{212}{"14"+"15"+"24"}$ **or** $\frac{"24"}{"14"+"15"+"24"}$ for a complete process to find the number of green pens sold, eg $\frac{212}{"14"+"15"+"24"} \times$ "24" **or** $\frac{"24"}{"14"+"15"+"24"} \times 212$ cao	Does not have to be seen as a ratio but all three needed P3 can be implied by the values 56, 60 and 96

Paper: 1MA1/1F

13	10	P1 P1 A1	for starting the problem, 12 ÷ 6 (=2) for a complete process to find width “2” × 5 cao	The square of side 2 cm may be just seen on the diagram

14	2 : 1	B1	cao	

Paper: 1MA1/2F

26	168	P1 P1 P1 A1	for working with ratio to find the amount for C or D eg. 1.5 × 2 (=3) or (A, B, C, D =) 2 , 7 , 3 , 3 oe **OR** for suitable expressions linking A with C or D, eg. A = x, C = 1.5x for "2 + 3 + 3 + 7" (=15) **OR** adds 4 suitable expressions, eg. "x + 3.5x + 1.5x + 1.5x" (= 7.5x) for a complete process to find the amount of money eg. 360 ÷ "15"× 7 **OR** 360 ÷ "7.5" × 3.5 cao	

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
12	$\frac{9}{25}$	M1	for $\frac{n}{6+9+10}$ where n is an integer < 25	
		A1	for $\frac{9}{25}$	Or equivalent fraction

Question	Answer	Mark	Mark scheme	Additional guidance
23	18	P1	for 240 ÷ 10 (= 24) **or** 240 ÷ 8 (= 30)	Accept 3 + 7 for 10, 3 + 5 for 8
		P1	for 3 × "24" (= 72) **or** 7 × "24" (= 168) **or** 3 × "30" (= 90) **or** 5 × "30" (= 150)	
		P1	for 3 × "24" (= 72) **and** 3 × "30" (= 90) **or** 7 × "24" (= 168) **and** 5 × "30" (= 150)	
		A1	cao	

6	3 : 5	B1	for 3 : 5 or for any other equivalent ratio	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	$\frac{3}{7}$	B1	oe	
(b)	1 : 2.5	M1	for appropriate method shown eg 30 ÷ 12 (= 2.5) **or** for a method that involves simplification of 12 : 30 approaching 1 : *n* , eg. 4 : 10 or 6 : 15 or 2 : 5 **or** for 2.5 : 1 or $2\frac{1}{2}$: 1	
		A1	for 1 : 2.5 or 1 : $2\frac{1}{2}$ **or** for *n* = 2.5	Accept a fraction equivalent to $2\frac{1}{2}$, eg. 1 : $\frac{30}{12}$ 2.5 alone gets M1A0

Question	Answer	Mark	Mark scheme	Additional guidance
29	6 : 15 : 20	P1	chooses a multiplier to equate the two fractions in terms of b eg $\frac{2}{5}\times\frac{3}{3}\left(=\frac{6}{15}\right)$ **or** $\frac{3}{4}\times\frac{5}{5}\left(=\frac{15}{20}\right)$ **or** lists equivalent fractions to $\frac{2}{5}$ up to at least $\frac{6}{15}$, eg. $\frac{2}{5},\frac{4}{10},\frac{6}{15},\ldots..$ **or** lists equivalent fractions to $\frac{3}{4}$ up to at least $\frac{15}{20}$, eg. $\frac{3}{4},\frac{6}{8},\frac{9}{12},\frac{12}{16},\frac{15}{20},\ldots..$ **or (**a : b =) 2 : 5 **and** (b : c =) 3 : 4 **or** for 6 : 15 or 15 : 20 seen	
		P1	puts into related terms ready for ratio eg $\frac{2}{5}\times\frac{3}{3}=\frac{6}{15}$ **and** $\frac{3}{4}\times\frac{5}{5}=\frac{15}{20}$ **or** for (a : b =) 6 : 15 **and** (b : c =) 15 : 20 **or** lists equivalent ratios up to a common element for b, eg a : b = 2 : 5, 4 : 10, 6 : <u>15</u> **and** b : c = 3 : 4, 6 : 8, 9 : 12, 12 : 16, <u>15</u> : 20	Need not be written in ratio form
		A1	for 6 : 15 : 20 oe	Accept equivalent ratios Accept a = 6. b = 15 and c = 20

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
17 (a)	5	P1	for finding the number of oranges required eg 8 ÷ 2 × 30 (=120) oe **or** for finding the number of oranges left from use of at least 2 boxes eg 24 × 2 – 30 (=18) or 24 × 4 – 90 (=6) **or** finds the correct amount of juice possible from at least two boxes eg 24 + 24 is 2 litres or 24 + 24 + 24 is 4 litres	A build up method with no process shown must use fully correct figures
		P1	for a complete process eg "120" ÷ 24 (=5) oe **or** 30 + 30 + 30 + 30 (=120) **and** 24 + 24 + 24 + 24 + 24 (=120) **or** 24 × 2 − 30 = 18, 18 + 24 = 42, 42 – 30 = 12, 12 + 24 =36, 36 – 30=6, 6 + 24 = 30	May be seen as a mixture of repeated subtraction and addition
		A1	cao with no arithmetic errors seen SCB1 for an answer of 10 supported by working	This mark cannot be awarded if the supporting work has an arithmetic error An answer only and no working is no marks
(b)	9 : 2	M1	for a partially simplified correct ratio eg 126 : 28 or any other equivalent ratio **or** 2 : 9	eg 630:140, 315:70, 63: 14 180:40, 90:20, 45:10, 4.5:1
		A1	cao	

20	1.75	P1 P1 P1 A1	for an initial process eg 1.80 ÷ 12 (=0.15) or 1.80 ÷ 3 (=0.6) for a correct second step eg “0.15” ÷ 3 (=0.05) or “0.6” × 7 (=4.2) or 3÷ “0.15”(=20) or 7 ÷ 3 (=2.3..) or “0.15” × 7 (=1.05) for finding the price of one pen eg-“0.05” × 7 (=0.35) or “4.2” ÷ 12 (=0.35) or 7 ÷ “20”(=0.35) or “2.3.... × “0.15” (=0.35) or “1.05” ÷ 3 (=0.35) cao	Accept 1.8 ÷ 12 = 15 (p) They can work in pounds or pence

Question	Answer	Mark	Mark scheme	Additional guidance
12	Yes, supported by correct working	P1	for 36 : 48 oe **OR** $\frac{36}{84}$ oe **or** $\frac{48}{84}$ oe	Relating to drama group 1
		P1	for $\frac{4}{7}$ **or** 3 : 4 oe (for group 2) **OR** $(\frac{36}{84}=\frac{3}{7})$ **or** $(\frac{48}{84}=\frac{4}{7})$ **or** 84 × 3 ÷ 7 (= 36 boys) **or** 84 × 4 ÷ 7 (= 48 girls) **or** *N* × 3 ÷ 7 and *N* × 4 ÷ 7	Relating to drama group 2 *N* can be any number (other than 84) of students in the 2nd group
		A1	for Yes with both ratios 3 : 4 oe **or** for a correct pair of fractions and stating they are equivalent.	Both equivalent forms of the ratios (fractions) must be the same "Yes" may be implied from working

24	33	P1 P1 A1	for relating 24 to 8 parts, **or** (1 part =) 24 ÷ 8 (= 3) **or** 15 – 7 (= 8) **or** starts to use a build-up method, eg (8 :) 14 : 30 for (15 – 4) **and** (24 ÷ 8) **or** 15 × 3 (= 45) **and** 4 × 3 (= 12) **or** for 12 (: 21) : 45 cao	8 parts = 24

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)	40	M1	2 ÷ (2+3) × 100 (=40) or build up to (and shows) 40:60 oe **or** for sight of $\frac{2}{5}$ oe **or** 100 ÷ 5 (=20)	
		A1	cao	
(b)	20 : 80	M1	100 − 20 (=80) or 80 : 20 oe	
		A1	20 : 80 oe	Accept any equivalent ratio; award full marks if an acceptable ratio is given and then incorrectly simplified.

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	23	B1	cao	
(b)	10 : 56	M1	for 10 or 56 identified	56 : 10 implies this mark only
		A1	for 10 : 56 or any other equivalent ratio	Accept 1 : 5.6

Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)	60	B1	cao	May be seen on diagram
(b)	50	B1	cao	May be seen on diagram
(c)	80 : 200	P1	for process to **use** the number of children, 80 or the total number of men and women, 200 in a ratio **or** for $\frac{80}{200}$	
		A1	for 80 : 200 oe	Award for a correct ratio even if subsequently incorrectly simplified.

Question	Answer	Mark	Mark scheme	Additional guidance
17 (a)	$\frac{70}{100}$	M1	for 100 – 30 (= 70) or $\frac{30}{100}$ oe	
		A1	for $\frac{70}{100}$ oe	Accept any equivalent fraction, decimal form 0.7 or percentage form 70%
(b)	45	P1	for start to process, eg 30 ÷ 2 (= 15)	
		A1	cao	
(c)	No with reason	C1	for No with reason **or** ft (b) **Acceptable examples** the number of red and yellow counters is an odd number 25 cannot be divided by 2 to give a whole number You can't have half a counter You can't split it evenly **Not acceptable examples** Yes ….. they are in the ratio 2 : 3 one must be more than the other	If the reason is supported by numerical evidence then that evidence must be accurate. can ft (b) Note: if the answer to part (b) is an even number then 'yes' with supporting evidence is an acceptable answer

Paper: 1MA1/1F

12	1 : 6 : 3	M1 A1	for any two algebraic statements from x, $6x$, $6x/2$ oe **or** any two numbers as a correct ratio eg 1 : 6 or 6 : 3 or 1 : 3 oe **or** any 3-term ratio using the numbers 1, 6 and 3 oe	 For any equivalent ratio.

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
22	Description	C1	Identifies a mistake in the working **Acceptable examples** Rob should divide by 8 He should have added the 3 and 5 first He divided 120 by 3 and 5 instead of 8 He did not do it as $120 \times \frac{3}{8}$ and $120 \times \frac{5}{8}$ He did not add the two ratios first **Not acceptable examples** He has done it in two parts but he should do it in one The answer should be 45 : 75 They do not add up to 120 He is supposed to add his numbers 40 + 24 does not equal 120	

Question	Answer	Mark	Mark scheme	Additional guidance
24	Yes (supported)	P1	for a process to find the volume of 1 tank eg $\pi \times 40^2 \times 160$ (= 804247.7… or 804.2...or 256000π)	Could be truncated or rounded
		P1	for complete process to find the volume of 4 tanks, [volume of tank] × 4 eg $\pi \times 40^2 \times 160 \times 4$ (= 3216990.8… or 3216.9... or 1024000π) **or** for process to find volume of fertiliser available per tank eg 32 × 1000 ÷ 4 (= 8000)	For this mark [volume of tank] must come from a calculation involving π, r^2, h
		P1	for a process to find the amount of mixture for 1 tank eg [volume of tank] ÷ 101 (= 7962.8...) or 4 tanks (= 31851.3…) **OR** for a process to find volume of mixture that 32 litres of fertiliser will make eg 32000 × 101 (= 3232000) or 32 × 101 (= 3232)	For this mark [volume of tank] must come from a calculation involving π, r^2, h **or** be stated as their volume
		C1	for Yes supported by correct figures shown eg a comparable figure in the range 31.8 to 31.9 (litres) **or** in the range 31800 to 31900 with 32000 (cm³) **or** in the range 3216 to 3217 with 3232 (litres) **or** in the range 3216000 to 3217000 with 3232000 (cm³) **or** in the range 7958 to 7963 with 8000 (cm³)	There are other possible pairs of values which can be used in the comparison

Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	28	B1	cao	
9 (b)	4 : 9	M1	for 8 : 18 or for any ratio equivalent to 4 : 9 **or** 9 : 4 or 2.25 : 1	
		A1	for 4 : 9	Accept 4 : 9 in the form 1 : *n*, eg 1 : 2.25

22	No with reason	C1	for No and valid reason, eg compares $\frac{1}{3}$ with $\frac{1}{2}$ or 16 (with 24) **Acceptable examples** No, $\frac{1}{3}$ are red not $\frac{1}{2}$ There are 16 red counters (not 24) No as she has used the ratio 1:1 (not 1:2) Incorrect as it is 16 : 32 No as she should divide by 3 (as 1 + 2 = 3) No as they would both be 24 so it doesn't fit in the ratio 1 : 2 No because 24 + 48 = 72 **Not acceptable examples** Yes, … No as the number of red counters would be lower There is 1 red for every 2 blue	

Paper: 1MA1/2F

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
23	144	P1	for using the ratio, eg $x = 2y$ **or** $2y + 2y + y$ (= 180) **or** 2 + 2 + 1 (= 5 (parts))	The first two marks may be awarded in either order
		P1	for using angle facts to give an equation, eg $x + x + y = 180$ **or** $2y + 2y + y = 180$ **or** $y + w = 180$ **or** $5x \div 2 = 180$ oe **or** $w = 2x$ **or** for $180 \div 5$ (= 36)	Award P2 for $x = 72$ or $y = 36$
		P1	for a complete process eg $180 - (180 \div 5)$	
		A1	cao	

10	3 : 5	M1 A1	for 24 : 40 or for any ratio equivalent to 24 : 40 **or** 5 : 3 for 3 : 5	 Accept 3 : 5 in the form n : 1, eg 0.6 : 1 **or** 1 : n, eg 1 : 1.66(..)

Question	Answer	Mark	Mark scheme	Additional guidance
26	21	P1	for process to work correctly with initial ratio, eg 120 ÷ 4 × 9 (= 270) **or** 90 + 120 + 60 (= 270)	Can be implied by 90 : 120 : 60 or by a second ratio that totals to 270
		P1	for process to find the value of 1 part in the new ratio, eg "270" ÷ (2 + 5 + 3) (= 27)	
		P1	for process to find both values for Errol, eg ("27" × 3) (= 81) **and** (120 ÷ 4 × 2) (= 60)	
		A1	cao	

10	2 : 3	M1 A1	for 24 : 36 oe **or** 3 : 2 **or** 1.5 : 1 2 : 3 or 1 : 1.5	 Do not ISW from 2:3

Question	Answer	Mark	Mark scheme	Additional guidance
25	Yes, supported by correct figures	P1	for a process to find the number of sweets Tina gives to Andy, eg $14 \div 7 \times 3 (=6)$ **or** for a process to work with fractions of the total to find fraction given to Andy, eg $\frac{14}{21} \times \frac{3}{7} \left(= \frac{2}{7}\right)$ **or** for dividing a given number (eg 441) in the ratio 1 : 6 : 14 (= 21 : 126 : 294)	May work with an equivalent ratio, eg 21 : 126 : 294 and do $294 \div 7 \times 3 (=126)$ as a first step May work in multiples of *x* for all marks
		P1	for a process to find number for Andy and Tina after first exchange, eg A = 1 + "6" (=7) **and** T = 14 – "6" (=8) **or** for a process to find the number of sweets Tina gives to Luke eg ("14" – "6") $\times \frac{12.5}{100}$ (= 1) **or** for a process to work with fractions of the total to find fraction given to Luke, eg for $\frac{(14 - "6")}{21} \times \frac{12.5}{100}$ **or** process to work out the number of sweets given to Andy **and** Luke for their total, eg "294" ÷ 7 × 3 (= 126) **and** ("294" – "126") $\times \frac{12.5}{100} (= 21)$	
		P1	for a process to find the final amounts or final shares for at least **two** of Andy, Luke and Tina eg two of 1 + "6" (= 7) , 6 + "1" (= 7) , 14 – "6" – "1" (= 7) **or** $\frac{1}{21} + \frac{"2"}{7} \left(= \frac{7}{21}\right), \frac{6}{21} + "\frac{1}{21}" \left(= \frac{7}{21}\right), \frac{14}{21} - "\frac{2}{7}" - "\frac{1}{21}" \left(= \frac{7}{21}\right)$ **or** "21" + "126" (= 147) , "126" + "21" (= 147) , "294" – "126" – "21" (= 147)	
		C1	Yes, supported by full working and accurate figures for Andy, Luke and Tina	Accurate figures with no supportive working scores 0

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	bar at 11 for cricket	M1	for reading from graph of 12 **or** 17	
		M1	(dep) for 40 – ([12]+[17]) (=11)	Where [12] and [17] are their attempt at reading from the graph. May be implied by bar of height 40 – ([12]+[17])
		C1	for bar drawn at 11 for cricket	Condone bar of different width to those given or freehand bar. Shading not required. Bar of height 11 drawn implies M1M1C1
(b)	$\frac{3}{10}$	M1	for $\frac{12}{40}$ or $\frac{6}{20}$	Accept other equivalent fractions. Do not accept equivalent decimals or percentages
		A1	cao	
(c)	$\frac{5}{9}$	B1	for $\frac{5}{9}$ or equivalent fraction	
(d)	1.25 : 1	B1	for 1.25 : 1 or $\frac{5}{4}$: 1 or $1\frac{1}{4}$: 1	Accept $n = 1.25$ Do not accept 1.25 alone or n : 1.25

Question	Answer	Mark	Mark scheme	Additional guidance
17	No, with correct figures	P1	for start to process to find amount of each paint colour needed eg $24 \div (4 + 3 + 1)$ $(= 3)$ **or** $8 : 6 : 2$ **or** for start to process to simplify 12 : 7 : 5 to a ratio that can be compared to 4 : 3 : 1 eg $12 \div 4 (= 3)$ **or** $7 \div 3$ $(= 2.3 \ldots)$ **or** $5 \div 1$ $(= 5)$	
		P1	for complete process to find amount of each paint colour needed eg "3" × 4 (= 12) **and** "3" × 3 (= 9) **and** "3" × 1 (= 3) **or** $12 : 9 : 3$ **or** for complete process to cancel 12 : 7 : 5 to a ratio that can be compared to 4 : 3 : 1 eg $12 : 7 : 5$ as $4 : "\frac{7}{3}" : "\frac{5}{3}"$ or $4 : "2.3 \ldots" : "1.6 \ldots"$ **or** $12 : 7 : 5$ as $"5\frac{1}{7}" : 3 : "2\frac{1}{7}"$ or $"5.14 \ldots" : 3 : "2.14 \ldots"$ **or** $12 : 7 : 5$ as $"2\frac{2}{5}" : "1\frac{2}{5}" : 1$ or $"2.4" : "1.4" : 1$	
		C1	No, with correct figure(s) for comparison. eg No with $12 : 9 : 3$ No, 9 litres of yellow needed No with $4 : 2.3 \ldots : 1.6 \ldots$	No may be indicated by eg 'not enough yellow'.

9	3 : 5	M1 A1	for 90 : 150 oe ratio **or** 5 : 3 cao	eg 30 : 50, 15: 25, 9 : 15 Accept 3 : 5 in the form n : 1, eg 0.6 : 1 **or** 1 : n, eg 1 : 1.66(…)

Paper: 1MA1/2F

10	1 : 4	M1 A1	for 20 : 80 oe ratio **or** 4 : 1 1 : 4	eg 10 : 40, 5 : 20, 2 :8, 20% : 80% or 0.2 : 0.8 oe Condone 1% : 4% but not 0.01 : 0.04 Accept 0.25 : 1 or $\frac{1}{4}$:1

Paper: 1MA1/2F

21	1380 2070 3450	M1	for beginning to work with ratio, eg 6900 ÷ (2 + 3 + 5) (= 690) **or** 6900 ÷ 2 (= 3450) **or** 6900 ÷ 5 (= 1380) **or** one accurate value correctly assigned	Award M0 for a correct value assigned to an incorrect person
		M1	for full method to find the value for two people, eg two of : "690" × 2 (= 1380) **or** "690" × 3 (= 2070) **or** "690" ×5 (= 3450) **or** (6900 – "3450") ÷ 5 × 2 (= 1380) **or (**6900 – "3450") ÷ 5 × 3 (= 2070) **or** (6900 – "1380") ÷ 8 × 3 (= 2070) **or (**6900 – "1380") ÷ 8 × 5 (= 3450) **or** 6900 ÷ 2 (= 3450) **and** 6900 ÷ 5 (= 1380)	Award M0 for a correct value assigned to an incorrect person
		A1	for Sid (£) 1380 Tam (£) 2070 Musa (£) 3450 If M1M0, award SCB2 for Sid (£) 3450 Tam (£) 2070 Musa (£) 1380	Correct values not assigned or assigned to an incorrect person, coming from an incorrect method, eg (Sid =) 6900 ÷ 2 = 3450 **and** (Tam =) 6900 ÷ 3 = 2300 **and** (Musa =) 6900 ÷ 5 = 1380 will score no marks

Paper: 1MA1/2F

PMT

edexcel
advancing learning, changing lives

Mark Scheme (Results)

March 2011

GCSE

GCSE Mathematics (Modular) – 5MB2F
Paper 01

PMT

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our website at www.edexcel.com

If you have any subject specific questions about the content of this Mark Scheme that require the help of a subject specialist, you may find our Ask The Expert email service helpful.

Ask The Expert can be accessed online at the following link:
http://www.edexcel.com/Aboutus/contact-us/

March 2011
Publications Code UG026937
All the material in this publication is copyright
© Edexcel Ltd 2011

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

PMT

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		Kite drawn	1	B1 Accept a rhombus, square, etc.
(b)		Parallelogram	1	B1
2 (a)		9	1	B1 cao
(b)		0.6,2.8,4.71,13.4	1	B1 cao
(c)		0.7	1	B1 cao
3 (a)		5	1	B1 cao
(b)		Line of symmetry	1	B1 for line of symmetry
4 (i)		Acute	2	B1 cao
(ii)		53°		B1 for an angle 51°-55°
5 (i)		130	2	B1 for 130 cao
(ii)		Reason		B1 for reason eg "angles on a (straight) line (sum to) 180° NB: those underlined are the essential elements of an answer.

PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
6 (a)		3*c*	1	B1 cao
(b)		2*x* + 6*y*	2	B2 for 2*x* + 6*y* (B1 for 2*x* or 6*y*)
7 (a)		Pattern	1	B1
(b)	7,10,13,16,19,22,25,28,31,34,37,40 43,46,49; or 3*n*+4	49	2	M1 for method eg counting up in 3s (to at least pattern number 6; allow errors if intention is clear), diagram extension (ft), use of 3*n*+4 (could be shown as part of a valid calculation eg 15×3) A1 49
8	Ticket sales: 16 × 100 = £1600 Meals: 12 × 100 = 1200 Fixed costs: 230 + 150 + 30 = 410; 410+1200=1610 or 1600-230-150-30=1190; 1190-1200 = -10 Total 410 + 1200 = £1610 (<£1600) OR £1610÷100=£16.10 ticket price (>£16) OR £1600 – 410 – 1200 = - £10 (or £10 needed) OR £1600-1200 = £400 (< £410 costs)	No. £1610 >£1600 £410 >£400	4	M1 for addition of 230, 150, 30 (or + 410) (=422 or 800) M1 for 12 × 100 (= 1200) A1 for £1610 total costs or £16.10 ticket price needed. C1 (dep on at least M1) for correct comparison and statement that “£1610”>”£1600” and that costs will not be covered. OR M1 for subtraction of 230, 150, 30 (or - 410) M1 for 12 × 100 (=1200) A1 for £400 left or -£10 C1 (dep on at least M1) for correct comparison and statement that “£410”>”£400” and that costs will not be covered.

PMT

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)	-7 to -9	2	1	B1 Accept -2
	(b)	8 to -7	15	1	B1 cao
10	(a)	$\frac{1}{2}\times\frac{1}{5}=$	$\frac{1}{10}$	1	B1 oe
	(b)	$\frac{1}{2}+\frac{3}{8}=\frac{4}{8}+\frac{3}{8}=$	$\frac{7}{8}$	2	M1 common denominators with at least one numerator correct or an unsimplified answer, or a fraction that is not completely processed eg $\frac{1\times 8+2\times 3}{2\times 8}$ OR conversion to correct decimals: 0.5 + 0.375 A1 for $\frac{7}{8}$ or 0.875
11	(a)		12	1	B1 cao
	(b)		200 cm^3	3	M1 for 10 × 4 × 5 A1 cao B1 (indep) for cm^3

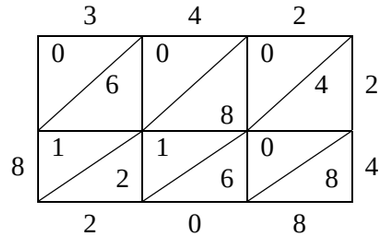
PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
12	London: £15, £34, £26 (£75) → 450, 1020, 780 (2250) KC Prague: 450, 750, 810 KC (2010KC) → £15, £25, £27 (£67) £ to KC is ×30; KC to £ is ÷30.	Yes. Cheaper in Prague (More in London)	5	M1 conversion method (× or ÷ as appropriate) or evidence of use of graph (seen, or implied, by at least lines or evidence of conversion by marks on axes) for at least one figure. M1 (dep) conversion applied to 3 figures or totals (converted figures must be stated, marks on graph insufficient) A1 converted figures shown (all three individual items or totals converted correctly; NB: no tolerance on graph) M1 totalling converted amounts C1 (dep on at least M1) comparison of "**totals"** and correct conclusion Eg "2250KC">"2010KC", "£75">"£67" so cheaper to buy in Prague.
13	Zparts: 150 is 15 boxes; 15 × £35 = £525 CompParts: 150÷11 is 13.6 so 13 offers (150-13)×£4=137×4=£548 OR 13×11=143; 150-143=7 extra (13×10+7)=137; 137×4=£548 OR 150×4=£600 13 offers so 13 free: 13×4=52; 600-52=£548	Zparts £525 CompParts £548 so Zparts cheaper	5	M1 for 15 × £35 (= £525) M1 for attempt to account for 1 free (eg ÷11 or listing with 10 charged and one not) M1 for ×4 (may be shown as ×40) A1 for totals of £548 and £525 OR unit costs of £3.64/£3.63 and £3.50 (oe) C1 (dep on at least M1) for making comparison figures clear and giving correct deduction.

PMT

5MB2F_01								
Question	**Working**						**Answer**	**Mark**	**Notes**
14	x	-3	-2	-1	0	1	Line	3	**(Table of values)** M1 for at least 2 correct attempts to find points by substituting values of x. M1 ft for plotting at least 2 of their points (any points plotted from their table must be correct) A1 for correct line between -3 and 1 **(No table of values)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $2x+3$ drawn (ignore any additional incorrect segments) (M1 for at least 3 correct points with no more than 2 incorrect points) A1 for correct line between -3 and 1 **(Use of $y=mx+c$)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $2x+3$ drawn (ignore any additional incorrect segments) (M1 for line drawn with gradient of 2 OR line drawn with a y intercept of 3 and a positive gradient) A1 for correct line between -3 and 1
	y	-3	-1	1	3	5			

PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
15	342 ×24 6840 1368 8208 24 ×342 7200 960 48 8208  300 40 2 6000 800 40 20 1200 160 8 4 6000+800+40+1200+160+8=8208	8208	3	M1 for a complete method with relative place value correct. Condone 1 multiplication error, addition not necessary. M1 (dep) for addition of all the appropriate elements of the calculation. A1 cao M1 for a complete grid with not more than 1 multiplication error, addition not necessary (inside numbers) M1 (dep) for addition of all the appropriate elements of the calculation (eg outside numbers) A1 cao M1 for sight of a complete partitioning method, condone 1 multiplication error, addition not necessary. M1 (dep) for addition of all the appropriate elements of the calculation. A1 cao

PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
16 (a)		21	1	B1 cao
(b)		$4n+1$	2	M1 for $4n$ + k ($k \neq 1$) A1 oe NB $n = 4n + 1$ gets M1 only.
17	300 ÷ (2 + 3 + 5) × 5 = 300 ÷ 10 × 5 =	150	2	M1 for 300 ÷ (2 + 3 + 5) or 300 ×5 or 30 seen or 60:90:150 A1 cao

PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
18	LCM (40, 24) = 120 Rolls 120 ÷ 40 = Sausages 120 ÷ 24 = OR Rolls 40 is 2 × 2 × 2 (×5) Sausages 24 is 2 × 2 × 2 (×3) 40, 80, **120**, 160, 200, 240, 280 24, 48, 72, 96, **120**, 144, 168	Rolls (packs) 3 Sausages (trays) 5 Hot dogs 120	5	M1 attempts multiples of either 40 or 24 (at least 3 but condone errors if intention is clear) M1 attempts multiples of both 40 and 24 (at least 3 of each but condone errors if intention is clear) M1 (dep on M1) division by 40 or 24 or counts up multiples. (implied if one answer correct or answers reversed) A1 rolls (packs) 3, sausages (trays) 5 OR any multiple of 3,5 A1 hot dogs 120 or ft on both of their packs or ft 'common multiple' OR M1 expansion of either number into factors M1 demonstrates one of the expansions that includes 8 oe M1 demonstrates a 2nd expansion that includes 8 oe A1 cao for rolls (packs) 3, sausages (trays) 5 A1 hot dogs 120
19	Bottom / top is 5 × 10 = 50; 50 × 2 = 100; 280 – 100 = 180 Other dimensions: 10 + 10 + 5 + 5 = 30; 180 ÷ 30 =	6	4	M1 recognition that the bottom/top is 5 × 10 (= 50), 50 seen M1 for 280 – 2 × "50" (= 180) M1 for "180" ÷ "other dimensions" or valid attempt to find height using these dimensions A1 cao

PMT

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481

Email publications@linneydirect.com
Order Code UG026937

March 2011
For more information on Edexcel qualifications, please visit www.edexcel.com/quals

Edexcel Limited. Registered in England and Wales no.4496750
Registered Office: One90 High Holborn, London, WC1V 7BH

PMT

edexcel

Mark Scheme (Results)

November 2012

GCSE Mathematics (Linear) 1MA0
Foundation (Non-Calculator) Paper 1F

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk for our BTEC qualifications.
Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson.
Their contact details can be found on this link: www.edexcel.com/teachingservices.

You can also use our online Ask the Expert service at www.edexcel.com/ask. You will need an Edexcel username and password to access this service.

Pearson: helping people progress, everywhere
Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2012
Publications Code UG033843
All the material in this publication is copyright
© Pearson Education Ltd 2012

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

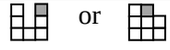
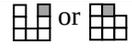
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		E	1	B1 cao
	(b)		Cylinder	1	B1 for cylinder or circular prism. Use professional judgement re spelling of cylinder
	(c)		6	1	B1 cao
	(d)		8	1	B1 cao
2	(a)		507	1	B1 cao
	(b)		40	1	B1 for 40 or forty or 4 tens (do not accept an answer of "tens")
	(c)		6000	1	B1 for 6000 or six (6) thousand
3	(a)		43	1	B1 cao
	(b)	3 + 10	13	1	B1 cao
	(c)		7.1 – 7.9 inc.	1	B1 for answer in the range 7.1 – 7.9 inc
4	(a)		36 – 40 inc.	1	B1 for any answer in the range 36 – 40 inc.
	(b)		line	1	B1 for line of length 4.8 – 5.2cm inc.
5	(a)			2	B1 for 6 tins drawn for Thursday B1 for 3 + ½ tins drawn for Friday. Use professional judgement re sketch of semicircle
	(b)		15	2	M1 for (4.5 – 3)×10 or 1.5×10 or 4.5×10 – 3×10 or 45 – 30 or 10 + 5 A1 for 15

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		Tuesday	1	B1 for Tuesday (accept 8)
	(b)		– 6	1	B1 cao
	(c)		Wednesday or 8	2	B2 for Wednesday or 8 OR M1 for an attempt to find the difference in at least 3 of: 5 and 4, 8 and 6, 6 and -2, -1 and -4, -3 and -6; ie the answers need not be correct. A1 for Wednesday or 8
7	(a)		$\frac{3}{5}$	2	B2 cao (B1 for $\frac{9}{15}$ oe) [SC: B1 for an answer of $\frac{2}{5}$]
	(b)		0.9	1	B1 for 0.9 or 0.90 or .9
	(c)		No + reason	1	B1 for no and 0.75 or 80% or $\frac{75}{100}$ and $\frac{80}{100}$
8	(a)			1	B1 for 
	(b)			1	B1 cao

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		No + reason	1	B1 for no and the (prob.) of red is (bigger than the (prob.) of blue. OR (prob.) of blue is nearer 0 OR (prob.) of red is closer to 1 OR (prob.) of red is 50% and the (prob.) of blue is about 20% oe
	(b)(i)		$\frac{4}{7}$	2	B1 for $\frac{4}{7}$ oe
	(ii)		0		B1 for 0 or $\frac{0}{7}$ or 0% (accept 0 out of 7, but not 0:7 or 0 to 7)
10		F + C + S 30 + 7 + 8 = 45 3×20 – 45 = 15	15	4	M2 for 30 + 7 + 8 (= 45) (M1 for 12 × 2 + 7 × 3 + 8 (= 53) or 12 × 2 + 7 × 2 (= 38)) M1 (dep on at least M1) for "20 × 3" – "45" or "20 × 3" – "53" A1 cao [SC: B1 for an answer of 22 if M0 scored]
11	(a)		(1, 2)	1	B1 cao (accept coordinates just shown on the grid)
	(b)		(0, –3)	1	B1 cao (accept coordinates just shown on the grid)
	(c)		(3, –2)	1	B1 for (3, –2) or (–3, –4) or (–1, 6) [SC: B1 for coordinates reversed, (–2, 3) or (–4, –3) or (6, –1) if coordinates reversed in parts (a) **and** (b)]

PMT

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)(i)		19	2	B1 cao
	(ii)		Add 4		B1 for add 4 (+4) oe or $4n - 1$ (or $\times 4 - 1$)
	(b)	15 – 10 = 5 5×4 = 20	20	2	M1 for (15–10)×4 or 4 + 4 + 4 + 4 + 4 or 59, 39 or (4×15 – 1) – (4×10 – 1) or '59' – '39' from a list A1 cao
13	(a)		$3f$	1	B1 for $3f$ or $f3$ or $3 \times f$ or $f \times 3$
	(b)		$6m$	1	B1 for $6m$ or $m6$
	(c)		$4a + 5h$	2	B2 for $4a + 5h$ or $5h + 4a$ (B1 for $4a$ or $5h$ or $4a + 5h = 9ah$)
14	(a)		08 50	1	B1 for 08 50 or 8 50 (am) or 10 to 9
	(b)	13 43 – 13 29	14	1	B1 cao
	(c)*	e.g. HL to SC: 11 02 – 11 41 Visit (at least 3 hours) SC to HL: 15 16 – 15 49 [Note : there are 9 possible solutions]	A fully correct plan showing departure times and arrival times of the two bus journeys	4	B1 for a departure time of 08 02 or 09 04 or 10 12 or 11 02 from HL M1 (indep) for a correct arrival time at SC and a correct departure time from SC (or Cartbridge St) which allows for a stay of at least 3 hours in SC (the differencing does not have to be seen) OR for correctly adding 3 hours to a their arrival time at SC B1 for a departure time from SC of 13 20 (13 11 from CS) or 14 24 (14 14 from CS) or 15 16 (15 07 from CS) C1 (dep on M1) for a complete correct plan which includes the departure and arrival times of the two bus journeys [Note: bus departure times may be identified by their starting times. Eg the 15 07 from Cartbridge Street would be acceptable for the identification of the bus which arrives a HL at 15 49]

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)		32	1	B1 cao
	(b)	e.g. $20 = £12.50 $100 = 5×£12.50 = £62.50 £62.50 – 60 = £2.50	£2.50 OR $4	3	M1 for a correct method to convert $100 to £, e.g. 5× '12.50' (= 62.50) ('12.50' is their reading from the graph at $20) M1 (dep) for '62.50' – 60 A1 for £2.5(0) (units must be stated) **OR** M1 for correct method to convert £60 to $, e.g. 3×32 (=96) or ft their answer to part (a) M1 (dep) for 100 – '96' A1 for $4 (units must be stated)
16	(a)	3×3×3×3	81	1	B1 cao
	(b)		4	1	B1 cao
17	(a)		7	1	B1 cao
	(b)		12	1	B1 cao
	(c)	$5w = 10 + 6$ $w = 16÷5$ or $w - \frac{6}{5} = \frac{10}{5}$ oe	16/5 oe	2	M1 for $5w-6+6 = 10 + 6$ oe or $w - \frac{6}{5} = \frac{10}{5}$ oe A1 for $\frac{16}{5}, 3\frac{1}{5}$, 3.2, oe

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)		21	1	B1 cao
	(b)		17	1	B1 cao
	(c)	55 – 15	40	2	M1 for 55 – 15 (accept 15 – 55 or 15 to 55 or 55 to 15 or 15, 55 but not 15 + 55) A1 cao
19*		360 – 200 – 90 (=70) (180 – '70') ÷2 angles at a point add to 360°, angles in a triangle add to 180°, base angles of an isosceles triangle are equal	y = 55 reasons	4	M1 for 360 – 200 – 90 oe M1 for (180 – '70') ÷ 2 Reasons: angles at a point add up to 360° angles in a triangle add up to 180° base angles of an isosceles triangle are equal C2 for y = 55° and all correct reasons Note: An answer of 55° alone, is not enough; y = 55° must be explicitly stated or clearly shown on the diagram (C1 for one correct reason) Note: the award of any C mark is dependant upon the award of at least M1

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
20		$\frac{1}{2} \times 60 = 30$, $30 \times 5 = 150$ $\frac{1}{3} \times 60 = 20$, $20 \times 4 = £80$ $3 \times 60 = 180$ $180 + 75 - 150 - 80 = £25$ 10 bags (i.e. $60 - 30 - 20$) sold for 25 $25 \div 10 = 2.50$ OR $\frac{1}{2} \times 60 = 30$, $30 \times £2 = £60$ profit $\frac{1}{3} \times 60 = 20$, $20 \times £1 = £20$ profit $60 + 20 = £80$ $80 - 75 = 5$ loss on 10 bags (i.e. $60 - 30 - 20$) $10 \times £3 = £30$ $30 - 5 = £25$ $£25 \div 10 = £2.50$	2.50	4	M1 for $\frac{1}{2} \times 60 \times 5$ (=150) or $\frac{1}{3} \times 60 \times 4$ (=80) M1 (dep on 1st M1) for $3 \times 60 + 75 -$ '150' – '80' oe (=25) M1 (dep on previous M1) for '25'÷(60 – '30' – '20') A1 for 2.50 (accept 2.5) OR M1 for $\frac{1}{2} \times 60 \times 2$ (=60) or $\frac{1}{3} \times 60 \times 1$ (=20) M1 (dep on 1st M1) for (60 – '30' – '20') × 3 – ('60' + '20' – 75) oe (=25) M1 (dep on previous M1) for '25'÷(60 – '30' – '20') A1 for 2.50 (accept 2.5)

<table>
<tr><th colspan="5">1MA0_1F</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>21</td><td></td><td>e.g.
41 – 21 (=20)
49 – 10 – 20 (=19)
16 + 19 = 35

OR
(100 – 49) – (16 + 21) (=14)
14 + 10 (=24)
100 – (41 + 24) = 35

<table><tr><td></td><td>w</td><td>b</td><td>c</td><td></td></tr><tr><td>Boys</td><td>16</td><td>21</td><td>14</td><td>51</td></tr><tr><td>Girls</td><td>19</td><td>20</td><td>10</td><td>49</td></tr><tr><td></td><td>35</td><td>41</td><td>24</td><td>100</td></tr></table></td><td>35</td><td>4</td><td>M1 for 41 – 21 (= 20) or
M1 for 49 – 10 – ‘20’ (= 19)
M1 for 16 + ‘19’
A1 cao

OR
M1 for 100 – 49 (=51)
M1 for ‘51’ – 21 – 16 (= 14) and ‘14’ +10 (= 24)
M1 for 100 – (41 + ‘24’)
A1 cao

NB working may appear in table or diagram</td></tr>
<tr><td>22</td><td></td><td></td><td>4×6 rectangle</td><td>2</td><td>B2 for a single 4×6 rectangle drawn anywhere on the grid
(B1 for a single 4×n rectangle or a single m×6 rectangle drawn anywhere on the grid)

Note: All nets and 3-D sketches get NO marks</td></tr>
</table>

PMT

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
23		180×1.5 40×1.5 110×1.5 30×1.5	Flour = 270 Ginger = 60 Butter = 165 Sugar = 45	3	M1 for ×24÷16 oe or 24/16 or 1.5 seen or 180 + 90 (=270) or 40 + 20 (=60) or 110 + 55 (=165) or 30 + 15 (=45) or sight of any one of the correct answers A2 for all 4 correct answers (A1 for 2 or 3 correct answers)
24	(a) (b)		Positive (correlation) 83 to 87 inc.	1 2	B1 for positive (correlation) [do not accept a relationship] B2 for an answer in the range 83 to 87 inc. OR M1 for a single straight line segment with positive gradient that could be used as a line of best fit or for an indication on the diagram from 148 on the height axis A1 ft from their line of best fit
25		$\frac{9}{2}\times(12+18)=135$ 135 ÷ 20 = 6.75 (=7 bags) 7 × 4.99 OR $18\times9-\frac{1}{2}(6\times9)$ = 135 135 ÷ 20 = 6.75 (=7 bags) 7 × 4.99	34.93	4	M1 for $\frac{9}{2}\times(12+18)$ or $18\times9-\frac{1}{2}(6\times9)$ or $9\times12+\frac{1}{2}\times(18-12)\times9$ or 135 seen M1 (dep) for '135'÷ 20 or 6 or 7 seen M1 (dep on previous M1) for '6' × 4.99 or '7' × 4.99 A1 cao [SC: M1 for (12×9 + 6×9) ÷ 20 (= 162÷20) or 8 or 9 seen M1 (dep) for '8' × 4.99 or '9' × 4.99 OR M1 for (18×9 − 6×9) ÷ 20 (= 108÷20) or 5 or 6 seen M1 (dep) for '5' × 4.99 or '6' × 4.99]

PMT

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26			Eg. How many hours do you read each day? 0 to 1 h ☐ over 1 h to 2 h ☐ over 2 h ☐	2	B1 for an appropriate question with reference to a time frame, with a unit of time, or a question with a time frame, with a unit of time, implied by responses B1 for at least 3 non-overlapping boxes (ignore if not exhaustive) or for at least 3 exhaustive boxes (ignore if any overlapping) [Note: labels on response boxes must not be inequalities] Do not accept frequency tables or data collection sheets for award of the second B mark
27		Area of cross section 4×7 + 5×2 or 9×2 + 5×4 **OR** 9 × 7 – 5 × 5 (= 38)	380	3	M1 for 4×7 + 5×2 (=38) or 9×2 + 5×4 (=38) or 7×9 − 5×5 (=38) or 4×7×10 or 5×2×10 (=100) or 9×2×10 (=180) or 5×4×10 (=200) or 9×7×10 (=630) or 5×5×10 (=250) M1 (dep) for '38'×10 or 380 or 4×7×10 + 5×2×10 or 9×2×10 + 5×4×10 or (7×9 − 5×5) ×10 A1 cao
28			Region shaded	3	B1 for circle arc of radius 3cm (± 2mm) centre Burford B1 for circle arc of radius 5 cm (± 2mm) centre Hightown B1 for overlapping regions of circle arcs shaded

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
29*		180÷9×1:180÷9×3:180÷9×5 =20:60:100 Not enough cement (but enough sand and enough gravel) OR 1×15:3×15:5×15 =15:45:75 15+45+75=135 (<180) Not enough cement (to make 180kg of concrete)	No + reason	4	M1 for 180 ÷ (1+3+5) (=20) or 3 multiples of 1: 3: 5 M1 for 1×'20' or 3×'20' or 5×'20' or 20 seen or 60 seen or 100 seen A1 for (Cement=) 20, (Sand=) 60, (Gravel=) 100 C1 ft (provided both Ms awarded) for not enough cement oe **OR** M1 for (1×15 and) 3×15 and 5×15 or 9×15 or sight of the numbers 15, 45, 75 together. M1 for '15' + '45' + '75' A1 for 135 (<180) C1 ft (provided both Ms awarded) for not enough cement oe

PMT

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG033843 November 2012

For more information on Edexcel qualifications, please visit our website
www.edexcel.com

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual
Llywodraeth Cynulliad Cymru
Welsh Assembly Government
Rewarding Learning

PMT

edexcel

Mark Scheme (Results)

Summer 2013

GCSE Mathematics (Linear) 1MA0
Foundation (Calculator) Paper 2F

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk for our BTEC qualifications.
Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

If you have any subject specific questions about this specification that require the help of a subject specialist, you can speak directly to the subject team at Pearson.
Their contact details can be found on this link: www.edexcel.com/teachingservices.

You can also use our online Ask the Expert service at www.edexcel.com/ask. You will need an Edexcel username and password to access this service.

Pearson: helping people progress, everywhere
Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2013
Publications Code UG037222
All the material in this publication is copyright
© Pearson Education Ltd 2013

PMT

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

PMT

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		2085	1	B1 for 2085 or 2,085
	(b)		five thousand, one hundred and eight	1	B1 for five thousand, one hundred (and) eight
	(c)		9 tenths		B1 for 9 tenths oe, eg $\frac{9}{10}$ or $\frac{90}{100}$
	(d)		160	1	B1 cao
2			inches grams litres	3	B1 for inch(es) or ins B1 for gram(s) or g B1 for litre(s) or *l* or millilitre(s) or m*l* (accept centilitres or cc or c*l* or cm^3)
3	(a)(i)		right angle marked	1	B1 for a clear intention to mark bottom left hand angle with R (accept r)or right-angle marked
	(ii)		acute	1	B1 for acute
	(iii)		reflex	1	B1 for reflex
	(b)		perpendicular line from *T* to *AB*	1	B1 for perpendicular line from *T* to *AB* (within guidelines of overlay)
4	(a)		5*m*	1	B1 for 5*m* or 5×*m* or *m*×5 or *m*5
	(b)		9*p*	1	B1 for 9*p* or *p*9
	(c)		4*tw*	1	B1 for 4*tw* or 4*wt* or *tw*4 or *wt*4 (condone 4×*tw* and 4×*wt*)

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			$\frac{40}{200}$	3	**(uses frequencies)** M1 for 40 or 200 or any correct day total M1 for $\frac{40}{T}$, $T > 40$ or $\frac{n}{200}$, $n < 200$ A1 for $\frac{40}{200}$ oe accept 20% OR **(uses boxes)** M1 for 2 or 10 M1 for $\frac{2}{T}$, $T > 2$ or $\frac{n}{10}$, $n < 10$ A1 for $\frac{2}{10}$ oe accept 20% OR **(uses rectangles)** M1 for 8 or 40 M1 for $\frac{8}{T}$, $T > 8$ or $\frac{n}{40}$, $n < 40$ A1 for $\frac{8}{40}$ oe accept 20% [SC B2 for 40 out of 200 oe]
6	(a)		circle drawn, centre *O* radius *OP*	1	B1 for circle drawn radius *OP* within guidelines of overlay
	(b)		chord drawn	1	B1 for any line drawn joining two points on circumference of circle (accept diameter) [NB shaded segment scores B0]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
7			110	2	M1 for 30 + 70 + 20 (=120) or 50 + 40 + 20 (=110) or 50 + 10 + 60 (=120) A1 cao
8	(a)	4 × 3	12	1	B1 cao
	(b)		5	2	M1 for 4 × 2 – 3 A1 cao
9			5%	2	**(uses percentages)** M1 for 30 – 25 (= 5) or 25 – 30 (= −5) A1 for 5% oe OR **(uses decimals)** M1 for or 0.3 – 0.25 or 0.25 – 0.3 (= −0.05) A1 for 0.05 OR **(uses fractions)** M1 for $\frac{30}{100} - \frac{1}{4}$ or $\frac{1}{4} - \frac{30}{100}$ $(=-\frac{5}{100})$ A1 for $\frac{5}{100}$ oe OR **(uses trial value, eg 60)** M1 for 0.3×60 – 0.25×60 (=3) or 0.25×60 – 0.3×60 (= −3) A1 for $\frac{3}{60}$ oe
*10			diagram or chart	4	B1 for a key or suitable labels to identify Kitty and George B1 for diagram(s) or chart(s) set up for comparison, showing data for at least 3 months, eg dual bar chart, line graph etc B1 for correct heights for Kitty **or** George, dependent on a linear scale C1 for a fully correct diagram or chart to include 4 months labelled and eg 'cars' or 'frequency' axis correctly scaled and labelled

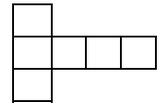
PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		12	1	B1 cao
	(b)		14	1	B1 cao
	(c)		16	1	B1 cao
12	(i)	2 2 3 3 3 4 4 5 5 6 (▲ under 4)	3.5	6	M1 for ordering the data condone one extra or one omission A1 for 3.5 or $3\frac{1}{2}$
	(ii)		4		M1 for 6 – 2 or 2 – 6 A1 cao
	(iii)		3.7		M1 for (2+2+3+3+3+4+4+5+5+6) ÷ 10 condone missing brackets or 37÷10 A1 for 3.7 or $3\frac{7}{10}$ [SC B1 for 31.6 or 33.4]
13			60	3	M1 for 9 × 14 + 6 (=132) M1 (dep) for full method to convert '132' from lbs to kg using the graph **or** for '132'÷2.2 (=60) A1 for 59 – 62 OR M1 for reading off 14 lbs (= 6.2–6.5) and 6 lbs (=2.4–2.9) M1 (dep) for 9 × '6.4' + '2.75' A1 for 59 – 62 [SC B2 for 66]

<table>
<tr><th colspan="6">PAPER: 1MA0_2F</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>*14</td><td></td><td></td><td>Correct statement</td><td>4</td><td>M1 for 6.50 × 8 + 12 or 6.50 × 7 + 15
M1 for 6.50 × 8 + 12 and 6.50 × 7 + 15
A1 for 64 and 60.5(0)
C1 (dep on first M1) for correct statement ft their figures

OR
M1 for 6.50 × (8−7) or 15−12
M1 for 6.50 × (8−7) and 15−12
A1 for 6.5(0) and 3
C1 (dep on first M1) for correct statement ft their figures

[SC If no working shown B1 for 64 and 60.5(0) or B1 for 6.5(0) and 3]</td></tr>
<tr><td>15</td><td></td><td></td><td><table><tr><td>coin</td><td>tally</td><td>freq</td></tr><tr><td>£1</td><td>lll</td><td>3</td></tr><tr><td>50p</td><td></td><td>(0)</td></tr><tr><td>20p</td><td>~~llll~~1</td><td>6</td></tr><tr><td>10p</td><td>lll</td><td>3</td></tr><tr><td>5p</td><td>ll</td><td>2</td></tr><tr><td>2p</td><td></td><td>(0)</td></tr><tr><td>1p</td><td>ll</td><td>2</td></tr></table></td><td>2</td><td>B2 for all frequencies correct condone missing 0s
(B1 for at least 3 correct non zero frequencies or at least 3 correct non zero tallies or at least 2 correct non zero tallies with their frequencies correct)</td></tr>
</table>

PMT

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)		8	1	B1 cao
	(b)			2	M1 for 5 or 6 squares drawn and joined A1 for a correct net [NB missing internal lines may be implied by grid]
	(c)		54	2	M1 for 3 × 3 × 6 oe A1 cao
17	(a)		720	2	M1 for 6 × 120 or 600 × 120 ÷ 100 oe A1 for 720 oe (accept 720.0)
	(b)		£10 or €12	3	M1 for 540÷1.2 (=450) oe, eg 4×100+50 (=450) M1(dep) for 460 – '450' (=10) A1 for £10 oe (accept £10.0) OR M1 for 460×1.2 (=552) oe, eg 4×120+60+12 (=552) M1 (dep) for '552' – 540 (=12) A1 for €12 oe (accept €12.0)
18			11	3	M1 for $52 \times \frac{3}{4}$ (=39) oe or $\frac{120}{360} \times 150$ (=50) oe M1 for $52 \times \frac{3}{4}$ (=39) oe and $\frac{120}{360} \times 150$ (=50) oe A1 cao

PMT

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
19	(a)		40	3	M1 for 120 × 100 (=12 000) or 20 × 15 (=300) M1 (dep) for '12 000' ÷ '300' A1 cao OR M1 for 120 ÷ 15 (= 8) or 100 ÷ 20 (= 5) M1 (dep) for '8' × '5' A1 cao OR M1 for 120 ÷ 20 (=6) or 100 ÷ 15 (=6.66…) M1 (dep) for '6'×'6.66…' (=40) or '6'×'6' (=36) or '6'×'7' (=42) A1 cao
	(b)		10.40	2	M1 for $\frac{20}{100} \times 52$ oe A1 for 10.4(0) [SC B1 for 62.4(0) or 41.6(0)]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*20		**(Method 1)** Angle *ACB* = 180 – 135 (= 45) (sum of angles on a straight line = 180) Angle *ABC* = 180 – 70 – 45 (=65) (sum of angles in a triangle = 180 (*x* =) 180 – 65 (=115) (sum of angles on a straight line = 180) OR **(Method 2)** Angle *ACB* = 180 – 135 (= 45) (sum of angles on a straight line = 180) (*x* =) 70 + 45 (=115) (exterior angle = sum of interior opposite angles) OR **(Method 3)** Angle DAB = 180 – 70 = 110 (sum of angles on a straight line = 180) (*x* =) 360 – 135 – 110 (sum of exterior angles of a polygon = 360)	*x* = 115	5	M1 for correct method to find angle *DAB* or angle *ACB* or angle *ABC* (may be implied by correct angle marked in diagram) M1 for complete correct method to find *x* A1 for *x* = 115 C2 (dep on M1) for fully correct reasons for chosen method no extras (C1 (dep on M1) for one correct reason for chosen method) [NB *x* = 115 must be stated explicitly, 115 only scores A0]

PMT

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		2.70	3	M1 for 2 × 1.40 + 2.10 + 2.40 (= 7.30) M1 (dep) for 10 – '7.30' or 2.7(0) A1 for 2.70 in correct money notation OR M1 for subtracting at least 2 different correct costs from (£)10 M1 for 10 – 1.40 – 1.40 – 2.10 – 2.40 A1 for 2.70 in correct money notation [SC B1 for 4.10 in correct money notation]
	(b)		2.21	3	M1 for 2.60×0.15 (= 0.39) or 260×0.15 (=39p) M1 (dep) for 2.60 – '0.39' or 260–39 (=221p) A1 cao OR M1 for 1 – 0.15 (=0.85) or 100 – 15 (=85) M1 (dep) for 2.60 × 0.85 oe A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*22			Not enough mincemeat since 600<700 OR Only able to make 38 mince pies since insufficient mincemeat	4	M1 for 45 ÷ 18 (= 2.5) M1 for 2.5 used as factor or divisor A1 for 562.5 and 875 and 250 and 700 and 2.5 (accept 2 or 3) OR for availables as 400 and 400 and 200 and 240 and 2.4 (accept 2 or 3) C1 ft (dep on at least M1) for identifying and stating which ingredient is insufficient for the recipe (with some supportive evidence) OR M1 for a correct method to determine the number of pies one ingredient could produce M1 for a correct method to determine the number of pies **all** ingredient could produce A1 for 80 and 51 and 90 and 38 and 108 C1 ft (dep on at least M1) for identifying and stating which ingredient is insufficient for the recipe (with some supportive evidence)
23	(a)		Response boxes overlap and are not exhaustive	2	B2 for **TWO** aspects from: No time frame given Non-exhaustive responses Response boxes over-lapping (B1 for ONE correct aspect)
	(b)		How many magazines do you buy each month? 0-4 5-8 over 8	2	B1 for a question with a time frame B1 for at least 3 correctly labelled response boxes (non-overlapping, need not be exhaustive) **or** for a set of response boxes that are exhaustive (could be overlapping) [NB do not allow inequalities in response boxes]
	(c)		One reason	1	B1 for one reason eg all the same age, may all be males, may all like same types of magazines, sample too small, biased

PAPER: 1MA0_2F

Question	Working	Answer	Mark	Notes
24	x | $x^3 + 2x$ 4 | 72 4.1 | 77.(121) 4.2 | 82.(488) 4.3 | 88.(107) 4.4 | 93.(984) 4.5 | 100.(125) 4.6 | 106.(536) 4.7 | 113.(223) 4.8 | 120.(192) 4.9 | 127.(449) 5 | 135 | 4.65 | 109.8(44625) 4.66 | 110.5(14696) 4.67 | 111.1(87563) 4.68 | 111.8(63232) 4.69 | 112.5(41709)	4.7	4	B2 for a trial $4.6 \leq x \leq 4.7$ evaluated correctly (B1 for a trial evaluated correctly for $4 \leq x \leq 5$) B1 for a different trial evaluated correctly for $4.65 \leq x < 4.7$ B1 (dep on at least one previous B1) for 4.7 [Note: Trials should be evaluated to at least accuracy shown in table, truncated or rounded] [NB No working scores 0 marks]

PMT

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25			28% or $\frac{14}{50}$	4	M1 for 100 − 30 (=70) or $1-\frac{3}{10}(=\frac{7}{10})$ M1 for '+70' ÷ (3 + 2) (=14) or '$\frac{7}{10}$' ÷ (3 + 2)(= $\frac{7}{50}$) M1 for '14' × 2 or $\frac{7}{50}\times 2$ A1 for 28% or $\frac{14}{50}$ oe OR M1 for a correct method to find (100−30)% of any actual sum of money, eg 0.7×500 M1 for '350' ÷ (3 + 2) (=70) M1 for '70' × 2 (=140) A1 for 28% or $\frac{14}{50}$ oe OR M1 for starting with a two numbers in ratio 3:2, eg 21 and 14 M1 for equating sum of their numbers to 100 – 30 (=70), eg '21' + '14' (=35) M1 for scaling sum of their numbers to 100%, eg '35'÷70×100 (=50) A1 for 28% or $\frac{14}{50}$ oe [SC award B3 for oe answers expressed in an incorrect form eg $\frac{2.8}{10}$]
26		$3x - 6 = x + 7$ $2x = 13$	6.5	3	M1 for $3\times x - 3\times 2$ (=$3x$ – 6) or $\frac{x}{3}+\frac{7}{3}$ seen M1 for correct method to isolate the terms in x or the number terms on opposite sides of an equation A1 for 6.5 oe
27			3.52	3	M1 for $1.35^2 + 3.25^2$ M1 (dep) for $\sqrt{(1.35^2 + 3.25^2)}$ (=$\sqrt{12.385}$) A1 for answer in the range 3.51 to 3.52

PMT

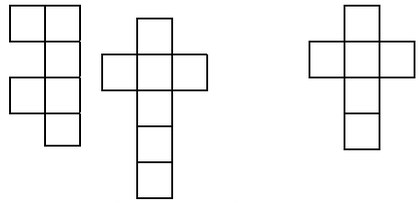
Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
2		MLP: candidates told that there are three spaces to fill. Braille: table shows: (i) centimetres (ii) ounces (iii) pints and candidates have been asked to write down what is missing.	Standard mark scheme Standard mark scheme
3	(a)	size of diagram is ×1.5	Standard mark scheme
	(b)	Line AB is 10 cm and T is 5 cm away from the line.	Standard mark scheme
6	(a)	OP = 5 cm and is a horizontal line.	B1 for circle drawn radius 4.5 to 5.5 cm
	(b)	circle size is increased by 1.5	Standard mark scheme
8	(a)	a is changed to e and b to f.	Standard mark scheme
10		1.5 cm grid.	B1 for intention to draw correct heights for Kitty **or** George, dependent on a linear scale

PMT

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
13		*x*-axis:1.5 cm for $\frac{1}{2}$ *y*-axis: 1.5 cm for 2 Leeway will be needed in marking answers.	Standard mark scheme
16	(a)	Models as well as diagrams provided.	Standard mark scheme
	(b)	Question changed, now reads: Look at the diagrams for Question 16(b). Which diagram, Shape 1, Shape 2 or Shape 3 is the net of a cube?'  Shape 1 shape2 shape3	B2 for diagram 3
	(c)	models as well as diagrams provided.	Standard mark scheme
20		Wording added: 'Angle FCA = 135^0 Angle CAB = 70^0	Standard mark scheme
26		MLP only: *x* is changed to *y*.	Standard mark scheme
27		Braille only. Wording added: '*XY* = 1.35 metres. *YZ* = 3.25 metres.'	Standard mark scheme

PMT

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG037222 Summer 2013

For more information on Edexcel qualifications, please visit our website
www.edexcel.com

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

Ofqual
Llywodraeth Cynulliad Cymru
Welsh Assembly Government
Rewarding Learning

PMT

edexcel

Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Calculator) Paper 2F

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2014
Publications Code UG039394
All the material in this publication is copyright
© Pearson Education Ltd 2014

PMT

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		French	1	B1 cao
	(b)		Ella	1	B1 cao
	(c)		Penny	1	B1 cao
2	(a)		Line drawn	1	B1 for line length 10 cm drawn
	(b)		Midpoint marked	1	B1 for midpoint of line marked
	(c)		Radius drawn	1	B1 radius shown
	(d)		75	1	B1 for answer in the range 73 – 77
3			3.25	3	M1 for $2 \times 9.25 + 9.50 + 10.55 + 4 \times 4.55$ (= 56.75) or at least one of each item added M1(dep) for $3 \times 20 -$ "56.75" A1 cao (SC B2 for answer 26.15) (SC B1 for answer of 13.85 or 36.75)
4			3.25	1	B1 for 3.25 oe
5	(a)		28 600	1	B1 cao
	(b)		20 000	1	B1 cao
	(c)		22 950	1	B1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6		(D, A) (J, A) (W, A) (D, M) (J, M) (W, M)	list of 6 combinations	2	B2 for six correct and distinct pairs (B1 for at least 3 pairs and no incorrect pairs or all correct pairs with repeats)
7	(a)		C and D	1	B1 cao
	(b)(i)		F	2	B1 cao
	(b)(ii)		2		B1 cao
8	(a)		27	2	M1 for a complete method to find the number of extra squares, e.g. by drawing a square of side 6 cm and attempt to find the number of extra squares or for $6^2 - 3^2$ or 3×9 or $4 \times 9 - 9$ A1 cao
	(b)		49	2	M1 for pattern 7 drawn or $(1 + 3 + 5) + 7 + 9 + 11 + 13$ or 40 or 7^2 or a list of square numbers up to 36 A1 cao
9			4.80	3	M1 for 3.50×12 (= 42) M1 for "42" − 37.20 A1 for 4.8(0) **OR** M1 for $37.20 \div 12$ (= 3.10) M1 for (3.50 − "3.10") × 12 A1 for 4.8(0) **Or** M1 for $37.20 \div 12$ (= 3.10) M1 for 3.50 − "3.10" A1 for 0.4(0) or 40p

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
10			13	2	M1 for ordering the 9 numbers or for indicating the middle number A1 cao
11	(a)		Kite drawn	1	B1
	(b)		Rectangle drawn with perimeter 14 cm	2	M1 for rectangle drawn or any shape with perimeter 14 cm A1 for a rectangle with perimeter 14 cm
	(c)		2 lines of symmetry drawn	2	B1 for horizontal or vertical line of symmetry B1 for horizontal and vertical line of symmetry and no extra lines
12	(a)		126, 21	3	B1 for 126 (seats) M1 for method identified to divide number of people by 6, ie "126" ÷ 6 or 84 ÷ 6 (= 14) or 42 ÷ 6 (=7) A1 for 21 (tables)
	(b)		Yes with £483	3	M1 for 84 × 4.5(0) (= 378) or 42 × 2.5(0) (= 105) M1 for 84 × 4.5(0) + 42 × 2.5(0) or "378" + "105" A1 for e.g. yes **and** (£)483 **or** yes **with** (£)17 left
13			15, 4.5	3	B1 for 15 M1 for (23 − 5) ÷ 4 A1 for 4.5 **N.B**. Answer can be either way round
14	(a)(i)		9	2	B1 cao
	(ii)		5		B1 cao
	(b)		*P* marked	1	B1 cao [P top left corner]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)(i)		2 or 3	2	B1 cao
	(ii)		12 or 24		B1 cao
	(b)		correct explanation	1	B1 for explanation eg "2 is prime"
16	(a)		(1, 4)	1	B1 cao
	(b)		cross at (−3, 2)	1	B1 for cross at (−3, 2)
	(c)		$x = 3$	1	B1 cao
17	(a)		30	1	B1 cao
	(b)		63	2	M1 for [(4 × 0)] + (5 × 1) + (10 × 2) + (7 × 3) + (3 × 4) + (1 × 5) Or [0] + 5 + 20 + 21 + 12 + 5 condone one error or omission or for 67 given as total A1 cao
	(c)		2.1	2	M1 for an attempt to divide the number of customers by the number of tables A1 for 2.1 or ft from (a) and (b)
18	(a)		2600	1	B1 for 2600
	*(b)	£100 1300 rand 3700 rand £285 Computer 4680 rand Watch 5200 rand Camera 4875 rand	computer, camera	3	M1 for method to convert 3700 rand into £ or for changing one amount in pounds into rand M1for a complete method to compare total money Simon has with the cost of each item C1 (dep M2) for correct conclusion with correct figures e.g.£383 - £386 or 4950 rand to 5050 rand

PMT

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19			Data collection sheet	3	B1 for labels (e.g. transport type) or transport types listed (minimum 2) B1 for tallies or tallies shown in table B1 for frequency (or total) o.e. **NB do not accept questionnaires or graphical approaches**
20			237 600	4	M1 for one multiplication involving two numbers from (1500 or 8 or 60) **or** 90 000 or 480 or 12 000 given M1 for 1500 × 8 × 60 (= 720 000) M1 for multiplying their number of cans by 330 **and** dividing by 1000 A1 cao **Note** these operations can be applied in any order **SC** B2 if M0 scored for digits 2376

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*21			$\frac{2}{3}$	3	M1 for attempting to write at least two fractions expressed with a common denominator with at least one of the two fractions correct A1 for three correct fractions with suitable common denominator C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for writing at least two of the fractions as decimals ie $\frac{2}{3}$ as 0.66(…) or 66(.6…)%, $\frac{7}{8}$ as 0.87(5) or 87.(5)%, $\frac{3}{4}$ as 0.75 or 75% A1 for three correct decimals or percentages C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for finding two fractions of the same number e.g. $\frac{2}{3}$ of 48 or $\frac{7}{8}$ of 48 (may be implied by shading a fraction of a rectangle divided into e.g. 48 parts) A1 for three correct values or three correct diagrams with shading C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for attempting to find the difference between $\frac{3}{4}$ and $\frac{2}{3}$ **and** between $\frac{3}{4}$ and $\frac{7}{8}$ at least one pair of fractions expressed with a suitable common denominator and at least one of the two fractions correct A1 for $\frac{1}{12}$ and $\frac{1}{8}$ or 0.08(333...) and 0.12(5) C1 (dep M1) for correct conclusion from comparison of the 2 differences.

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22			Graph completed	2	B1 for line from (2.5, 45) to (3.5, 45) B1 ft line of correct gradient to axis (after 1½ hour)
23	(a)		92.3521	1	B1 cao
	(b)		p^6	1	B1 cao
	(c)		t^5	1	B1 cao
	(d)		6	1	B1 cao
*24			Tuesday and Friday	3	M1 for 179 ÷ 12 or 162 ÷ 12 or 170 ÷ 12 or 143 ÷ 12 A1 for 14.9(166…) or 15 and 13.5 or 14 and 14.1(66…) or 15 and 11.9(16…) or 12 C1 (dep M1) ft for comparison of their results for all the days with the number of teachers available leading to a correct statement **Or** M1 for 179 ÷ 15 or 162 ÷ 13 or 170 ÷ 14 or 143 ÷ 12 A1 for 11.9(3…) or 12 and 12.4(6…) or 13 and 12.1(4…) or 13 and 11.9(1…) or 12 C1 (dep M1) ft for comparison of their results for all the days with 12 leading to a correct statement **Or** M1 for 15 × 12 or 13 × 12 or 14 × 12 or 12 × 12 A1 for 180 and 156 and 168 and 144 C1 (dep M1) ft for comparison of their results for all the days with the number of students taking part leading to a correct statement

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25	(a)		Points plotted	1	B1 for points plotted at (12, 6) and (13, 2)
	(b)		Description	1	B1 for description; e.g. as the temperature goes up the number of units of gas used goes down oe accept negative correlation.
	(c)		5 – 7	2	M1 for use of graph e.g. a single straight line segment with negative gradient that could be used as a line of best fit **or** an indication on the diagram from 12 on the *y* axis. A1 for 5 – 7
26	(a)		⅔	2	M1 for intention to subtract 4 from both sides or divide each term by 3 or $3p = 2$ written in the workspace A1 for ⅔ accept answer to two decimal places rounded or truncated
	(b)		−4, −3, −2, −1, 0	2	B2 for all 5 correct values; ignore repeats, any order (B1 for 4 correct (and no incorrect) values or all five correct values and –5)
27			2.064(285714…)	2	M1 for substitution of 0.7 into expression or 2.89 or 2.06 seen A1 for 2.064(285714…) or $\frac{289}{140}$
28			$5\frac{2}{3}$	4	M1 for $AB = 2x$ or $DC = 2x + 4$ or for 38 – 4 (= 34) M1(dep) for $x + x +$ '$2x$'+ '$2x + 4$' or for "38 – 4" ÷ 6 M1 for '$6x + 4$' = 38 A1 for $5\frac{2}{3}$ oe **N.B.** Accept answers in the range 5.6 to 5.7 if M3 scored **SC** if M0 then B2 for an answer in the range 5.6 to 5.7

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
29	(a)		40	3	M1 for $32^2 + 24^2$ M1 for $\sqrt{1600}$ or $\sqrt{(32^2 + 24^2)}$ A1 cao
	(b)		22.72	4	M1 for use of $\pi \times 60$ oe M1 for method to calculate perimeter of triangle, eg $2 \times$ '40' + 48 (=128) M1(dep M2) for complete method to find total length of strip for both mirrors or to find the cost of strip for one mirror, eg $2 \times$ £5.68 A1 for £22.72 from correct working

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q02	(c)	Circle enlarged	Standard mark scheme
Q02	(d)	Angle arms lengthened. Angle *m* = 75 degrees	Standard mark scheme
Q07		Triangle D rotated 90 degrees clockwise and moved down 1 square. Triangle E moved down 1 square. Triangle F moved so that the right angle is bottom left	Standard mark scheme
Q08		unit' used instead of 'cm', image named shape X, enlargement drawn on grid and named shape Y. Wording changed: "Look at the diagram for Question 8(a) in the Diagram Book. It shows a square grid. Two shaded shapes are drawn on the grid: shape X and shape Y. Shape X is a square made from nine squares. How many MORE squares must be added to shape X to make shape Y?"	Standard mark scheme

PMT

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q11	(a)	Kite drawn on grid. Asked for mathematical name for the quadrilateral.	B1 for kite
	(b)	2cm grid. Wording added to text of question "Each square represents a one centimetre square."	Standard mark scheme
	(c)	Height of top and bottom vertices of hexagon increased. Size of whole enlarged.	Standard mark scheme
Q13		Diagram rotated 90 degrees clockwise.	Standard mark scheme
Q14		Part (b) removed, Part (iii) added to (a) and reads "For this prism, write down the number of vertices."	B1 for 6 cao
Q15	(a)	'nine' inserted before 'numbers'	Standard mark scheme
Q16		2cm grid. Line L thick and dashed. At S cross changed to black circle.	Standard mark scheme
Q17		Frequency column widened to allow for working out	Standard mark scheme
Q18		1½ cm grid. Right axis labelled	Standard mark scheme
	(b)	3700 changed to 3600	Ft changes into working
Q22		2cm grid. Right axis labelled	Standard mark scheme
Q24		2cm grid. Right axis labelled. Crosses changes to solid circles.	Standard mark scheme

PMT

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q22		2cm grid. Right axis labelled	Standard mark scheme
Q24		2cm grid. Right axis labelled. Crosses changes to solid circles.	Standard mark scheme
Q24		2cm grid. Right axis labelled. Crosses changes to solid circles.	Standard mark scheme
Q27		*x* changed to *y*	Standard mark scheme
Q28		Wording added, “AB is parallel to DC”. AD labelled as *x* cm.	Standard mark scheme
Q29	(b)	Mirror B made more obviously an isosceles triangle.	Standard mark scheme

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

PMT

edexcel

Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Unit 1: 5MB1F_01 (Foundation)

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2014
Publications Code UG039443
All the material in this publication is copyright
© Pearson Education Ltd 2014

PMT

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

PMT

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark for correct method A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		10	1	B1 cao
	(b)		7	1	B1 cao
	(c)		Two circles	2	B1 for 2 circles for Thursday
			4 whole circles 1 half circle		B1 for 4 whole circles and 1 half circle for Friday oe
2	(a)		2	1	B1 cao
	(b)		Red, Grey	1	B1 cao
	(c)		Bowfell	1	B1 cao
3	(a)		23	1	B1 cao
	(b)		25	1	B1 cao
	(c)		Decreasing	1	B1 for decreasing, downward, falling, –3° etc
4	(a)		Cross at ½	1	B1 for mark at ½
	(b)		Cross at 0	1	B1 for mark at 0
	(c)		Cross at ¾	1	B1 for mark at ¾

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			2 ½ hours	4	M1 for an attempt to find the difference between 2.40pm and 6pm eg 3h 20 min M1 (dep) for attempt to subtract 2 × 25min from time difference A1 for 2½ (hours) or 2.30oe C1 for correct units for with their answer OR M1 for an attempt to add 25 min to 2.40pm (= 3.05) or take 25 min from 6pm (= 5.35) M1 (dep) for "5.35" – "3.05" A1 for 2½ (hours) or 2.30 oe C1 for correct units with their answer
6			TS, TR, TF CS, CR, CF MS, MR, MF	2	B2 all correct pairs with no incorrect pairs. (B1 for at least 6 different correct pairs, ignoring any incorrect combinations)
7	(a)		Correct frequencies: 4,9,6,3	2	B2 for all frequencies correct (B1 for 2 tallies or 2 frequencies correct)
	(b)		Swimming or 9	1	B1 ft from frequencies or tallies in (a) or diagram in (c)
	(c)		Diagram or chart	3	B1 for labelling horizontal axis with activities B1 for linear scale labelled frequency oe B1 for accurately representing the data ft from their frequencies or tallies in (a)
*8			Yes and reason	2	M1 for a line drawn up from 50 or across from 80 or reading 55 or 74 C1 (dep on M1) for statement including yes and a correct reading eg 55, 74 or £6 less"

PMT

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		13	2	M1 for 18 – 5 or 5 – 18 or a – 5 or 18 – a (where a is score in list $a \neq 18$) or − 13 A1 cao
	(b)		11.5	2	M1 for an attempt to order or for answer 9 Or $\frac{10+13}{2}$ or $\frac{5+13}{2}$ A1 cao
	(c)		15	2	M1 12 × 7 (=84) or "84" − 69 A1 cao
*10			Quick Mix from correct working	4	M1 for 13.50 + 4 × 6.90 (= 41.1) M1 for 7.20 × (4 + 1) +5.90 (= 41.9) A1 for 41.1(0) **and** 41.9(0) if working seen C1 ft (dep on M1) for a statement of Quick Mix with amounts clearly associated with correct companies

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		No and comparison	2	M1 for writing a fraction of 360 eg $\frac{40}{360}$ or $\frac{36}{360}$ OR $\frac{1}{9}$ or $\frac{1}{10}$ or decimals 0.11 or 0.1 or percentages 11.1% or 10% (% needed) A1 for No and $\frac{40}{360} > \frac{36}{360}$ oe OR M1 for $\frac{10}{100} \times 360$ (= 36) A1 for No with 36
	(b)		75	3	M1 for 360 – (70 + 40 + 150) (= 100) M1 for 150 ÷ ("100" ÷ 50) oe A1 cao
12	(a)		(17) 9 (14) 12 (13) 7 (29) 22 (21)	2	B2 for all 4 correct entries (B1 for 2 or 3 correct entries)
	(b)		$\frac{40}{72}$	1	B1 for $\frac{40}{72}$ oe
	(c)		$\frac{13}{32}$	1	B1 for $\frac{13}{32}$ oe

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*13			4	4	M1 for 200 ÷ (1 + 9) (= 20) M1 for 750 ÷ 20 (= 37.5) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 750 × 10 (= 7500) M1 for 200 × 140 (= 28 000) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 200 × 140 (= 28 000) M1 for 28 000 ÷ (9 + 1) (= 2800) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 200 ÷ (1 + 9) (= 20) M1 for 140 × "20" (= 2800) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		Point plotted	1	B1 for point plotted at (6,35)
	(b)			1	B1 for description of dynamic relationship eg "the lower the temperature, the more hot chocolate sold" or negative correlation
	(c)			1	Single straight line of best fit which could be used to take readings
	(d)		21-26	1	B1 for answer in the range 21-26 or ft from single straight line segment (if previous B0)
15			$\frac{20-x}{20}$	2	M1 for writing $20 - x$ OR 20 as any denominator below an algebraic expression in x or $20 - x \div 20$ A1 for $\frac{20-x}{20}$ or $1 - \frac{x}{20}$ oe
16	(a)		2 reasons	2	B2 for 2 aspects from: Bias or leading question; No time frame; Vague response boxes (B1 for 1 aspect)
	(b)		Question	2	B1 for unbiased question including time period B1 for at least 3 non-overlapping which are also exhaustive; do not accept inequality symbols in response boxes.

PMT

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
Q01		Pictogram circles larger	
Q04 Q07c		Probability scales longer 1.5cm grid Wording inserted "You may use the space below or the grid in the Diagram Book"	
Q08		Graph line moved to go through (50, 70) . 2cm grid. Y axis finishes at 100.	
Q12 Q14	(a)	Wording inserted "There are four spaces to fill" 2cm grid crosses, changed to filled in circles. Right axis labeled	

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

PMT

edexcel

Mark Scheme (Results)

Summer 2016

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 1

PMT

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2016
Publications Code 5MB1F_01_MS
All the material in this publication is copyright
© Pearson Education Ltd 2016

NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 5MB1F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Evens	1	B1 cao
	(b)		Impossible	1	B1 cao
	(c)		X marked	1	B1 for X marked at $\frac{1}{4}$
2	(a)		11	1	B1 cao
	(b)		49	2	M1 for 10 + 16 + "11" + 12 or ft "11" from (a) or for 11 × 4 + 2 + 3 A1 cao
3			1 lemon 3 orange	2	B2 for 1 lemon and 3 orange labelled (B1 for labels for P(Orange) > P(Lemon))
4			21 58	2	M1 for a method using a relevant time calculation, eg 22 15 – 8 mins or 22 05 + 8 mins A1 for 21 58 oe
5	*(a)		Diagram or chart	4	B1 for key or suitable labels to identify Paris and Nice B1 for diagram(s) or chart(s) set up for comparison showing data for at least three days, eg dual bar chart, composite bar chart B1 for correct heights for Paris or Nice C1 for fully correct diagram or chart with axes correctly scaled and labelled
	(b)		Statement	1	C1 for statement of comparison

PMT

PAPER: 5MB1F/01					
Question		Working	Answer	Mark	Notes
6	(a)		5, 1, 4, 8	2	M1 for at least 2 correct frequencies or 2 correct tallies A1 for all frequencies correct (ignore tally column)
	(b)		dog	1	B1 ft from frequency column or from tally if different to frequency. Accept 8
7			4.77 m 477 cm	4	M1 for intention to subtract the 3 lengths from 10 m M1 for 1000 – (41 + 112 + 370) oe or 10 – (0.41 + 1.12 + 3.7) oe A1 for 4.77 or 477 oe B1 for correct units with final answer
8		VM, VC, VS MC, MS, CS	6 correct combinations	2	M1 for at least 4 correct combinations A1 all 6 correct with no incorrect combinations and no repeats
9.	(a)		3	1	B1 cao
	(b)		Home Style	1	B1 cao
	(c)		Sure Stitch, Compact, Classic	2	M1 for 3700 ÷ 16 or for any price × 16 A1 Sure Stitch, Compact, Classic
10	(a)		8000	1	B1 (accept 8 thousand or 8)
	(b)		4000	1	B1 cao

PMT

PAPER: 5MB1F/01					
Question		Working	Answer	Mark	Notes
11	(a)		46	1	B1 cao
	(b)		35.5	2	M1 for identifying 35 and 36 or for 5 and 6 or for 5.5 A1 for 35.5
	(c)		5	1	B1 cao
12	(a)		$\frac{1}{4}$	1	B1 for $\frac{1}{4}$ oe, eg $\frac{90}{360}$
	(b)		19	3	M1 for method to find the angle for 15 years (= 95), if measured accept 93 – 97 M1 for correct method to find degrees per person 115 ÷ 23 (= 5) or people per degree 23 ÷ 115 ($=\frac{1}{5}$) A1 cao
13			68 (supported)	4	M1 for 20 × 8.25 + 6 × 3 (= 183) M1 for 20 × 5.50 + 2 × 2.50 (= 115) M1 (dep on at least M1) for finding the difference between their two totals A1 cao OR M1 for 8.25 – 5.50 (= 2.75) M1 for 6 × 3 – 2 × 2.50 (= 13) M1 (dep on at least M1) for finding the total saving for their differences A1 cao

PMT

PAPER: 5MB1F/01

Question		Working	Answer	Mark	Notes
14	(a)		Point plotted	1	B1 for point plotted at (8.5, 35)
	(b)		Positive	1	B1 for positive
	(c)		40 - 50	2	M1 for suitable line of best fit drawn or evidence of vertical line at 10 or a point indicated at $(10, y)$ where $40 \leq y \leq 50$ A1 for 40 – 50
15		<table><tr><td></td><td>F</td><td>B</td><td>D</td><td></td></tr><tr><td>T</td><td>8</td><td>**11**</td><td>25</td><td>44</td></tr><tr><td>C</td><td>**12**</td><td>17</td><td>**7**</td><td>**36**</td></tr><tr><td></td><td>**20**</td><td>**28**</td><td>32</td><td>80</td></tr></table>	Completed table	3	B3 for fully correct table (B2 for 4 or 5 correct entries) (B1 for 2 or 3 correct entries)
16			$\frac{x+10+x+x-4}{3}$	3	M1 for $x + 10$ or $x - 4$ M1 for $x + 10 + x + x - 4$ A1 for $\frac{x+10+x+x-4}{3}$ oe
17			1746	3	M1 for $1 - 0.03$ (= 0.97) or for 0.03×1800 (= 54) M1 for "0.97" × 1800 or for 1800 − "54" A1 cao
*18			School £8930 Hospital £13 395	5	M1 for 23.5×1000 (= 23 500) or for $\frac{1}{20} \times 1000$ (= 50) oe M1 for "23 500" × $\frac{19}{20}$ (= 22 325) oe or for $(1000 - 50) \times 23.50$ (= 22 325) oe M1 for "22 325" ÷ 5 (= 4465) M1 for "4465" × 2 or "4465" × 3 C1 for £8930 for school and £13 395 for hospital

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
Q1		Diagram enlarged. Wording added 'It shows a probability scale'. Diagram enlarged. Wording removed 'with a cross (x)'.	Standard mark
Q2		Wording added 'It shows a pictogram'. Diagram enlarged.	Standard mark

PMT

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
Q3		Diagram removed. Wording changed 'There are 6 sweets in a bag. The flavour of each sweet is either orange or lemon. The flavour of two of the sweets is shown below.' Wording added 'Orange' and 'Lemon'. Jane is going to take at random one on the sweets from the bag. She is twice as likely to take an orange sweet as a lemon sweet. Write a suitable flavour for the remaining sweets. Wording added 'The first two are repeated for you' and 'There are four spaces to fill'. Wording added 'Orange' and Lemon' put below the question with four short answer lines underneath.	Standard mark
Q 4		2155 column removed from table.	Standard mark
Q5		Table turned to vertical format. Wording added 'It shows a grid'. Grid enlarged: 12 squares across and 21 squares up.	Standard mark
Q6	(a)	Wording added 'It shows a frequency table'. Wording added 'using the information in the diagram book' after 'frequency table'. Wording added 'there are eight spaces to fill' below 'Complete the…'	Standard mark
Q8		Box removed.	Standard mark

PMT

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
Q9		'Number of different stitches' column removed from table.	Standard mark
Q10		Grid enlarged. Diamonds changed to solid circles.	Standard mark
Q11		Base line added to stem and leaf diagram.	Standard mark
Q12		Diagram enlarged.	Standard mark
Q13		Information stacked in vertical format and put into tables.	Standard mark
Q14		Wording added 'It shows a scatter graph'. Diagram enlarged. Crosses changed to solid circles.	Standard mark
Q15		Wording added 'There are six spaces to fill'. **Braille only**: roman numerals (i) to (vi) put in spaces on the table. 8 (i) 25 44 (v) 17 (ii) (iii) (vi) (iv) 32 80	Standard mark

PMT

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London WC2R 0RL



Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 2F



Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2017
Publications Code 1MA1_2F_1706_MS
All the material in this publication is copyright
© Pearson Education Ltd 2017

General marking guidance

These notes offer general guidance, but the specific notes for examiners appertaining to individual questions take precedence.

1 All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first.

Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the response should be sent to review.

2 All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no answer) indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

Questions where working is not required: In general, the correct answer should be given full marks.
Questions that specifically require working: In general, candidates who do not show working on this type of question will get no marks – full details will be given in the mark scheme for each individual question.

3 **Crossed out work**
This should be marked **unless** the candidate has replaced it with an alternative response.

4 **Choice of method**
If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.

If no answer appears on the answer line, mark both methods **then award the lower number of marks.**

5 **Incorrect method**
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review for your Team Leader to check.

6 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

7 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question or its context. (e.g.. an incorrectly cancelled fraction when the unsimplified fraction would gain full marks).

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (e.g.. incorrect algebraic simplification).

8 Probability

Probability answers must be given as a fraction, percentage or decimal. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

9 Linear equations

Unless indicated otherwise in the mark scheme, full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously identified in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

10 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g. 3.5 – 4.2) then this is inclusive of the end points (e.g. 3.5, 4.2) and all numbers within the range.

Guidance on the use of abbreviations within this mark scheme	
M	method mark awarded for a correct method or partial method
P	process mark awarded for a correct process as part of a problem solving question
A	accuracy mark (awarded after a correct method or process; if no method or process is seen then full marks for the question are implied but see individual mark schemes for more details)
C	communication mark
B	unconditional accuracy mark (no method needed)
oe	or equivalent
cao	correct answer only
ft	follow through (when appropriate as per mark scheme)
sc	special case
dep	dependent (on a previous mark)
indep	independent
awrt	answer which rounds to
isw	ignore subsequent working

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		$3p$	B1	cao
(b)		$2m^3$	B1	cao
(c)		$10 - 4c + 6d$	M1	for $-4c$ or $6d$ (accept $+-4c$)
			A1	for $10 - 4c + 6d$
2		60	B1	cao
3 (a)		Walk	B1	cao
(b)		7 on chart	B1	for bar of height 7 drawn for girls walking
(c)		4	B1	cao
(d)		96	M1	for method to find number of Year 6 students in the survey e.g. $5 + 9 + 6 + 4 + 9 + 7 + 4 + 1 + 2 + 1$ (= 48) or $14 + 10 + 16 + 5 + 3$ (= 48)
			A1	for 96 or ft from (b), eg 82 if no bar in (b)
4		$\frac{11}{30}, \frac{2}{5}, \frac{7}{15}, \frac{1}{2}$	M1	converts fractions to a common form, e.g. fractions with a denominator of 30, decimals or percentages, at least two conversions correct or any 3 fractions in correct order
			A1	correct order

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
5 (a)		Monday wrong	C1	for seeing difference in tally marks and frequency for Monday
(b)		Comment	C1	for suitable comment, eg extra picture for Tuesday needed or explains that 0.5 of a CD is not possible
6		268.20	P1	for a process to work out the value of the £1 coins, eg. 495 ÷ 3 (= 165) or 495 × 0.33...or of the 50p coins, eg. 124 ÷ 2 (= 62)
			P1	for process to find the number of 20p coins, eg. (495 – 124 – (“165”) (= 206)
			P1	for complete process to find total value using consistent units., eg. (“165”) + (124 ÷ 2) + (“206” × 0.2) or 165 + 62 + 41.2
			A1	cao (accept 268.2)
7		0.985	B1	oe
8 (a)		25	B1	for 25 (accept 5^2)
(b)		24	B1	cao
(c)		23, 29	B1	for 23 and 29 and no extras
9		54	M1	for method to form equation, eg $90 + 2x + 3x = 360$ or for $360 – 90$ (= 270)
			M1	for $5x = 360 – 90$ or for $2x + 3x = 360 – 90$ or for $2x = 108$ or for $3x = 162$ or for $270 \div 5$
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
10		Letters2send (supported)	P1	for the start of a process to find comparable costs at either shop, e.g. 150 ÷ 25 (= 6) or 150 ÷ 30 (= 5), 150 ÷ 10 (= 15), 2.10 ÷ 15 = (=0.14)
			P1	for process to find cost from Letters2send, e.g. (150 ÷ 25) × 3.49 (= 20.94)
			P1	for process to find cost at Stationery World, e.g. (150 ÷ 30) × 2 × 2.10 (= 21)
			C1	for correct conclusion with correct values from each shop (20.94 and 21)
				OR
			P1	for the start of a process to find comparable costs, eg 3.49 ÷ 25 (= 0.1396), 2.10 ÷ 10 (= 0.21), 25 ÷ 3.49 = (7.1...), 2.10 ÷ 15 = (= 0.14)
			P1	for process to take into account the offer at Stationery World, eg buy 30 envelopes pay for 20,
			P1	for complete process to find values that can be used for comparison, eg 30 × 0.13(96) and 2 × 2.10 (= 4.2(0))
			C1	for correct conclusion with correct values from each shop (4.1(88) and 4.2(0))

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)		29	B1	answer in the range 29 to 30
(b)		186 to 195	M1	for changing 6ft 3 inches to inches e.g. $6 \times 12 + 3$ (= 75) or changing 1ft to 30 cm
			M1	for a method to convert to cm, e.g. 25 →63 then × 3, $6 \times 30 + \frac{1}{4} \times 30$
			A1	for answer in the range 186 to 195 or ft from correct use of graph
12		0.0733(03...)	M1 A1	for correct numerator (3.4496.....) or correct denominator (47.0596) or 0.073 for 0.0733(03.....)
13 (a)		Rotation	B2	for a fully correct rotation at (–4,–1), (–3,–1), (–4,–4), (–1,–2)
			[B1	for the quadrilateral in correct orientation and size or rotated 90° anticlockwise about the origin]
(b)		Reflection in the *y*-axis	B1	for reflection
			B1	for *y*-axis (or *x* =0)
				[A combination of transformations scores 0 marks]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
14 (a)		$5(1 - 2m)$	B1	cao
(b)		$2ab(a + 3b)$	M1	for $2a(ab + 3b^2)$ or $2b(a^2 + 3ab)$ or $ab(2a + 6b)$ or $2ab$(2 term expression with terms in a or b or ab, can include constants), eg $2ab(1a + 3ab)$, $2ab(1 + 3b)$
			A1	for $2ab(a + 3b)$
15 (a)		0.47	B1	
(b)		2.28×10^9	M1	for correct value but not in standard form, eg $22.8 \times 10^{3+5}$, 228×10^7, 2 280 000 000 or for 2.28×10^n , $n \neq 9$
			A1	cao
16		T shown on the map	C1	for showing a perpendicular bisector or point T equidistant from points B and C.
			C1	for a circle or arc of circle of radius 2.5 cm or point T 2.5 cm from point A
			C1	for T shown in correct position

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
17		98	P1	for process to find P(1), e.g. 1 – 0.17 – 0.18 – 0.09 – 0.15 – 0.1 (= 0.31) or for a process to find P(1 or 3), e.g. 1 – 0.17 – 0.09 – 0.15 – 0.1 (= 0.49)
			P1	for process to find the number of 3s, e.g. 0.18 × 200 (=36) or process to find the number of 1s, e.g. P(1) × 200 (= 62), or process to find the number of (1 or 3)s, eg [P(1) + 0.18] × 200 or process to find any expected frequency, using any probability × 200, eg 0.17 × 200
			A1	cao
				OR
		98	P1	for process to find P(2 or 4 or 5 or 6), eg 0.17 + 0.09 + 0.15 + 0.1 (= 0.51)
			P1	for process to find the number of (2 or 4 or 5 or 6)'s, eg "0.51" × 200 (= 102)
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
18		Yes (supported)	P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
			P1	(dep P1) for process to work out total number of adults or the total number of people, e.g. "468" × 5 ÷ 2 (= 1170) or "468" × 7 ÷ 2 (= 1638)
			A1	for 1170 or 1638
			P1	for process to work out the percentage of theatre full, e.g. $\frac{"468"+"1170"}{2600} \times 100$ (= 63) or for a process to work out 60% of 2600 (= 1560)
			C1	for a correct conclusion supported by correct figures e.g. 63% or 1560 **and** 1638
				OR
			P1	for a process to work out 60% of 2600, eg. $\frac{60}{100} \times 2600$ (= 1560)
			P1	(dep P1) for process to work out total number of children, e.g. "1560" × 2 ÷ 7 (= 445(.7...)
			A1	for 445(.7...)
			P1	for process to work out number of children in the circle, eg. "445(.7...)" ÷ 4 (= 111 to 112)
			C1	for a correct conclusion supported by correct figures e.g. 111 to 112
				[Where appropriate, accept rounded or truncated values]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
18 cont.				OR
			P1	for a process to find the maximum number of children, eg. 2600 × 2 ÷ 7 (= 742(.8…))
			P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
			A1	for 468 and 742(.8...)
			P1	for $\frac{"468"}{"742(.8..)"} \times 100$ (= 63) or process to work out 60% of "742.8.." (= 445(7..))
			C1	for a correct conclusion supported by correct figures e.g. 63% or 468 and 445(.7...)
				[Where appropriate, accept rounded or truncated values]
19		Side elevation	C2	for the side elevation (4 cm by 2 cm rectangle with a solid line drawn 1 cm from the 2 cm edge, and correct orientation)
			[C1	for the side elevation as a rectangle]
		Front elevation	C2	for the front elevation as a trapezium in correct orientation with base 4 cm, parallel sides 1 cm and 4 cm
			[C1	for the front elevation as a trapezium with two right angles]
				[Ignore incorrect or no labelling]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
20 (a)		57.1	P1	for a process to find time from Liverpool to Manchester, eg. 56 ÷ 70 (= 0.8 (hrs) or 48 (mins))
			P1	for a process to find the total distance, eg 56 + 61 (= 117) or the total time, eg"48" + 75 (= 123) or "0.8" + $\frac{75}{60}$ (= 2.05), with consistent units of time
			P1	(dep P2) for a correct process to find average speed with consistent units of time, eg."117" ÷ "2.05" or ."117" ÷ "123"
			A1	for answer in the range 57 to 57.1
(b)		explanation	C1	for explaining that the time taken for the two parts of the journey must be the same or the distance from Leeds to York is $\frac{3}{4}$ the distance from Barnsley to York oe
21 (a)		3.9	M1	for a ratio of $\frac{8.1}{5.4}$ (= 1.5) oe or $\frac{5.4}{8.1}$ (= 0.66..) oe or $\frac{2.6}{5.4}$ (= 0.48..) oe or $\frac{5.4}{2.6}$ (= 2.07..) oe
			A1	cao
(b)		2.05	M1	for $\frac{5.4}{8.1} \times 6.15$ (= 4.1) or $\frac{2.7}{8.1} \times 6.15$ oe or ft "scale factor" from (a)
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
22		Secure Bank (supported)	P1 P1 C1	for a process to work out the interest after one year e.g. 0.02×25000 (= 500) or 0.043×25000 (= 1075) or for 1.02 or 25500 or 1.043 or 26075 for process to find value of the investment after 3 years or the multiplicative factor for 3 years at one of the banks, e.g. $25000 \times 1.02 \times 1.02 \times 1.02$ oe (= 26530...) or 1.02^3 (= 1.0612...) or $25000 \times 1.043 \times 1.009 \times 1.009$ oe (= 26546...) or $1.043 \times 1.009 \times 1.009$ (= 1.0618.....) [accept total interest of 1530...or 1546...if final values of investment are not found] for Secure Bank from correct figures eg 26530.. and 26546..or 1530.. and 1546.. or 1.0612.. and 1.0618
23		$4.755 \leq n < 4.765$	B2 [B1	for $4.755 \leq n < 4.765$ for 4.755 or 4.765 or 4.764$\dot{9}$]
24		$x = -8$, $x = 3$	M1 M1 A1	for factorisation or for substitution into quadratic formula $(x \pm a)(x \pm b)$ where product of a and $b = 24$, eg $(x \pm 4)(x \pm 6)$ or difference of a and $b = 5$, eg $(x \pm 2)(x \pm 7)$ $\frac{-5 \pm \sqrt{5^2 - 4 \times 1 \times -24}}{2}$ oe (condone one sign error) for $(x + 8)(x - 3)$ or for $\frac{-5 \pm \sqrt{121}}{2}$ oe cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
25 (a)		$5n - 2$	B2	for $5n - 2$ oe
			[B1	for $5n + k$, k may be 0]
(b)		No (supported)	C1	for No with evidence, e.g. $3 \times 4^2 = 48$, $\sqrt{48}$ is not an integer, he has multiplied by 3 first but should have squared first

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
1	(c)	MLP and braille: *c* and *d* changed to *s* and *t*.	Standard mark scheme but change *c* & *d* to *s* & *t*
3		Grid enlarged. Key moved above the diagram. Right axis has been labelled. Boys shading has been changed to dotty. The vertical axis label has been moved above the vertical axis	Standard mark scheme
5	(b)	Pictogram enlarged. Key moved above the diagram.	Standard mark scheme
8		Wording 'nine' added	Standard mark scheme
9		Diagram enlarged. Angle sizes moved outside the angle arcs; the arcs have been made smaller.	Standard mark scheme
11		Grid enlarged. Right axis labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis. In (a) Number '74' changed to '90'.	(a) becomes 35 to 37. In (b) suggest 180 to 200
13	(a)	Question reversed. Rotation drawn on the diagram and labelled as 'shape B'. Grid enlarged and *y* axis reduced so it finishes at 2. Shapes labelled 'shape A' and 'shape B'. Wording changed 'It shows shape A and shape B given on a grid. Describe fully the single transformation that maps shape A onto shape B.'	Award B1 for "rotation" Award B1 for "90° clockwise about centre O [or (0,0)] NB: award B0 for any indication of a mention of other transformations
13	(b)	Grid enlarged and y axis reduced so it starts at -2. Wording 'B' and 'C' deleted and shapes labelled as 'shape P' and 'shape Q'. Triangles P and Q moved above the *x* axis. Wording added 'It shows shape P and shape Q given on a grid.'	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
14	(b)	MLP only: *a* changed to *x* and *b* changed to *y*.	Standard mark scheme but change *a* & *b* to *x* & *y*
16		Number '250 metres' changed to '500 metres'. Points *B* and *C* moved to the right to allow for use of specialist equipment. Points *B* and *C* joined with a line. Scale moved above the diagram.	Standard mark scheme, but given the alternations to the given diagram, the relative positions of any constructions and the position(s) of *T* will change.
17		Table turned to vertical format.	Standard mark scheme
19		Alternative question. Model has been provided for all candidates. Diagram enlarged and also provided for MLP. The measurements on the prism have been doubled. Wording added next to the diagram of the trapezium 'Diagram NOT accurately drawn'. Four shapes have been provided below the trapezium labelled A to D. Wording added above the four shapes 'scale: 2 cm to 1 metre'. Question wording has changed and has been split into two parts: 'Look at the model or at the diagrams for Question 19 in the Diagram Book. They show a prism with a cross section in the shape of a trapezium. All measurements are in metres. Below the prism there are four shapes A, B, C and D. (i) Which shape shows the front elevation of the prism? (ii) Which shape shows the side elevation of the prism?'	Mark scheme amended as follows: (i) B2 for C (ii) B2 for A (B1 for B or D)
21		Diagram enlarged. Measurements '2.6 cm' and '5.4 cm' added to the diagram.	Standard mark scheme

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

Question 27

This question was not well answered.

Many students were able to obtain one mark for calculating the number of each colour pen but then failed to progress any further with anything creditworthy. A common incorrect method seen was to add together 7, 3 and 4 and to divide 212 by the sum of the parts as they would to divide into a given ratio. It was common to see 212 ÷14 and then an answer of 60.
Some students did put 24 as an answer but did not always support this with working and all the three figures of 14,15 and 24 were required for the first mark. Again, a good number of arithmetic errors were seen in this question.

Question 13

Many students answered this question successfully. Students who recognised that the length of the side of each square is 2cm generally went on to get full marks. Some students took the whole diagram to be a square whilst some found the area, usually in shaded squares (30) A few students measured the length of the square (1.7cm). Others divided the length (12) by the number of squares (9). Some students misread the question and thought the whole shape was a square which resulted in a wrong answer of width 12. The majority of students either scored full marks or zero marks in this question.

Question 14

This was a very poorly answered question. Many students were able to write a ratio equivalent to 4.5 : 2.25 but rarely in the required form.

Question 26

This question was poorly answered with the majority of students starting their solution by dividing £360 into the ratio 2 : 7 No marks were available after this initial error. Trial and improvement methods sometimes lead to a correct solution but those working with the correct ratio of 2 : 7 : 3 : 3 usually found the correct answer of £168. A common misconception led to a ratio of 2 : 7 : 3.5 : 3.5 where 1.5 had been added rather than been used as a scale factor. Algebraic approaches were rarely seen and were often error strewn when attempted. A few students used 6 as a total ratio for C and D and incorrectly got the 'correct' answer by using 1 and 5 or 5 and 1 instead of 3 and 3. This gained NO marks.

Question 12

This was well done by the majority, giving 9/25 as the final answer. A few students added 6, 9 and 10 incorrectly but were still able to gain the method mark. The final mark was sometimes lost when the student failed to give the final answer as a fraction. Common incorrect answers included 25/9 and 9/100.

Question 23

Many students successfully started by using the ratio 3 : 7 to find the number of stamps that Tom and Adam each had before Tom bought some stamps from Adam. There were some students who divided 240 by 3 and by 7 instead of by 10 but most used a correct process and found that Tom started with 72 stamps and Adam with 168 stamps. Those who then used the ratio 3 : 5 correctly to find that Tom finished with 90 stamps and Adam with 150 stamps usually went on to give the correct answer. There were many students, however, who did not use the ratio 3 : 5 correctly. Instead of working out $240 \div 8 = 30$ they used 24 (from $240 \div 10$). It was common to see $7 - 5 = 2$ followed by 2×24 and a final answer of 48.

Question 6

Students were required to extract a ratio from a diagram of the shaded to unshaded squares.
The question was answered well with most of those who actually worked with ratio able to do so successfully. However, some students got confused and tried to work with fractions: $\frac{3}{5}$, $\frac{3}{8}$, $\frac{5}{3}$ and $\frac{5}{8}$ being commonly seen or worked with 'the whole' eg 3:8.

Question 9

Whilst the correct answer of $\frac{3}{7}$ was the modal answer to part (a), an incorrect answer of ¾ was common. Part (b) was the first poorly answered question on the paper. Many did correctly partially simplify the given ratio to earn one mark or showed an intention to divide both numbers by 12, but few gave the answer in the required form, failing to appreciate that the first number in the ratio had to be 1. Answers such as 1 : 3 or 1 : 2.6 (failing to convert $\frac{6}{12}$ to 0.5) were often seen from weaker students.

Question 29

Only a very few students were able to fully solve this problem, with many failing to even attempt this question. Some were able to write the fractions in correct ratio form gaining one mark. Some also earned one mark for $\frac{6}{15}$ or $\frac{15}{20}$ although this was often followed by fraction addition. Many gave an answer of 2 : 8 : 4 where they had simply added the two values of *b*. The layout of their solutions aided those who tackled it methodically.

Question 17

In part (a) many students tackled this proportionality question very well, showing full working to support a correct decision and gaining full credit. A range of approaches were seen, with the most commonly seen being to calculate the number of oranges required to make 8 litres and either dividing this by the number of oranges in a box or calculating with multiples of 24 until 120 was reached.

Of the students that attempted to work with the number of boxes needed for each 2 litres and working with the number of oranges left over, a full method that was not confused was rarely seen, but often one mark was awarded for a suitable start to the method.

Some students confused the use of the 30 and 24 and wrote 6 oranges left rather than 6 oranges still required and this inevitable led to confused and incorrect working.

Another common error was to not engage with the fact that 30 oranges were required for 2 litres, thinking that 30 oranges made 1 litre and to multiply by 8 at the start rather than 4, then successfully divide by 24 leading to an answer of 10. In this instance the special case was applied.

In part (b) the majority of students demonstrated confidence and understanding of the requirement in this question to express the quantities as a ratio, with many beginning with 1260:280 and attempting to simplify in stages to a variety of different end points. This gained the method mark available, with many continuing further to a fully correct ratio in its simplest form.

However, when no marks were awarded it was often due to a lack of any ratio being written or clearly communicated. Some answers were given as a fraction which unfortunately gained no credit as the question clearly asked for a ratio.

Students should be encouraged to check they have answered the question asked.

Question 20

Over half of the students were able to gain marks on this question. Although many did not fully answer the question the majority were able to find the cost of one pencil. Some did go on to begin to work with the ratio and this was required to progress to the level required for marks to be awarded.

A common error was to find the cost of one pencil and then multiply by 3 instead of division by 3 thus using the ratio incorrectly. Students who found the cost of one pen using a correct method then usually went on to find the accurate answer of £1.75

Question 12

This question was not well answered with only a few understanding what was being asked in the question. Many did not realise that they had to find the ratio of boys to girls for each of the two drama groups. A common approach was to find $\frac{3}{7}$ and in some cases $\frac{4}{7}$ of 84 (36 + 48) concluding that there were 36 boys and 48 girls also in the second group and therefore Ann must be correct. This was not enough to get full marks without ratios (or fractions) being considered. Very few wrote $\frac{3}{7} \div \frac{4}{7}$ for the second group, 3 : 7 frequently appearing. Those that did usually went on to gain full marks.

A common error when considering fractions was to express the boys in group one as $\frac{36}{48}$ rather than $\frac{36}{84}$.

Those students who set up two columns and worked separately on the two groups had the greater chance of success.

Question 24

Many students found the sum of the ratios (26) perhaps thinking that they were required to share an amount with the given ratio. Some ignored the 24 and simply subtracted 4 from 15 for their answer. Marks were available for build-up methods of finding equivalent ratios, but 12 (:21) : 45 was required for both method marks.

Question 13

In part (a) the most common incorrect answer was obtained by writing 2 : 3 as 66%. Students using equivalent ratios and recognising they needed $\frac{2}{5}$ or 20% did much better.

Part (b) was answered better than part (a), with many students able to link the percentage to the ratio. It is evidence that a number of students incorrectly carried forward information from part (a). The majority of correct answers were given as 1 : 4 or 2 : 8. One mark was awarded to those students who did not get this far, but did show sufficient understanding to get to 80.

Question 9

Whilst almost two thirds of the cohort could read off the scale correctly for part (a) this means that one third could not. This is a basic skill which students should practise.
In part (b) the vast majority of students scored at least one mark for clearly identifying either 10 or 56. The upper value of 56 was sometimes incorrect as students misread the scale of the graph or some students lost the final mark for expressing the numbers not as a ratio but as a fraction. The other common error seen was to simply subtract the two values to give an answer of 46. Any incorrect simplification of a correct answer was not penalised as this was not required by the question.

Question 12

This was answered well by most candidates, many of whom obtained 2 marks by stating the ratio 1: 6 : 3 or an equivalent ratio. Frequently 1 mark was given for finding one correct pairing of ratios. Few candidates went down the algebraic route, but those who did often picked up at least 1 mark. Those who simply wrote down three acceptable numbers without using ratio notation could only gain 1 mark.

Question 22

This question was answered well by a large proportion of candidates, who identified that Rob should have added the ratios before dividing. Comments such as “add the ratios and then divide by 120” were accepted as simply being poorly worded. Some candidates spoilt an otherwise good answer suggesting that after adding the ratios, they should multiply 40 and 24

by 8, which was an incorrect statement. Often candidates showed full correct working for sharing 120 in the ratio 3:5 which was an alternative way of answering the question.

Question 24

Nearly all responses scored zero marks. Responses that scored all 4 marks were very rare. Very few candidates used the correct formula for the area of the cross-section or for the whole cylinder, many using the diameter rather than the radius. Most candidates failed to find a volume, but simply found the area of a rectangle by multiplying 80 by 160 and worked with 12800 as if it was the volume of one cylinder. The most common way of scoring a mark was for finding the amount of fertiliser for each tank. Where marks were gained this was generally for the process of working out the volume of a single tank or for a process to find the volume of water per tank. A small minority of candidates got 1 mark for showing 8000 in their working. The ratio of 100:1 equalling 101 parts evaded nearly all candidates, resulting in minimal full mark answers.

Question 9

Almost all students could continue the sequence correctly to gain the mark in part (a).

Part (b) performed less successfully. Whilst many were generally able to write the correct values using ratio notation, not all continued to write their ratio in the simplest form and although many achieved the correct simplified ratio, some went on to do further incorrect

simplification such as 4:9 leading to 2:3 which lost the accuracy mark. However correct simplification to 1:2.25 (1: *n*) did not lose the accuracy mark and was occasionally seen. When no marks were awarded, it was often due to not understanding how to write the appropriate values using ratio notation, such as simply writing as a fraction instead. Other commonly seen responses that gained no credit included choosing the incorrect terms from the sequence or selecting three terms e.g. 8:23 or 8:13:18 and a small minority attempted to find the *n*th term.

Question 22

As with previous series and explanation questions, a variety of responses were seen. Approximately half of the cohort provided a suitable explanation with a decision of “No” that was accompanied by appropriate figures to support and justify the reasoning. The common correct approach was to correctly calculate the number of red and blue counters there actually were or reason that if the statement were correct then there would be 72 counters in the bag. Centres should discourage students from writing answers that simply restate the facts given in the question such as there is 1 red for every 2 blue, as these are unlikely to gain credit. Occasionally a decision was not provided, incorrect figures were stated or a contradiction was given which led to the mark being withheld but this was less frequent than with previous similar explanation style questions.

Question 23

Very few students were able to gain full marks on this question. A small number made a positive start and gained one of the first two P marks, the equations most commonly seen were $x = 2y$, $2x + y = 180$ and $y + w = 180$. Division by 3, rather than 5, of the 180° in the triangle was commonly seen. Most students understood the correct angle facts for angles in a triangle / on a straight line. Many students ignored the fact the triangle was isosceles and calculated the angles as if it was an equilateral triangle, giving 60° angles which led to $180 - 60 = 120$ as the incorrect answer. Many students attempted to assign values to x and y, these values were usually incorrect but if the correct values were seen this usually led to a correct value for w as well.

Question 10

Many correct ratios in the simplest form of 3 : 5 were seen and gained full marks. Where 2 marks were not awarded, the majority picked up the method mark for using the information given in the question to set out the ratio as 24 : 40. If the ratio was not fully simplified, students usually stopped at 6:10 and occasionally further incorrect simplifications were shown or changed to a fraction leading to the loss of the accuracy mark. When no marks were awarded it was often due to writing fractions rather than using ratio notation or writing the ratio 24:16 instead of 24:40.

Question 26

This question was poorly answered with the vast majority of scoring students only scoring one mark for identifying and working with the given amount of £120 equating to four parts of the ratio. The ratio 90:120:60 was often seen and awarded the first mark. Of those scoring no marks, it was often due to interpreting the question as being to share £120 in the ratio of 3:4:2 rather than considering the information as being a part to whole problem, with the most popular incorrect value seen as £30. Of the students who successfully worked with the initial ratio correctly, a few continued to complete the question correctly and divide the total of the initial ratios of £270 by 10 to give one part of the new ratio as £27. Hence, obtaining the correct answer of £21 difference.

Question 10

This question differentiated well between candidates. A significant proportion were able to correctly write the ratio of the number of cows to the number of sheep in its simplest form as was required. There were also many candidates who were able to write down a correct initial ratio of 24:36 but did not successfully write this in its simplest form often due to incomplete simplification leading to answers of 12:18, 8:12, 4:6 or commonly 6:9. Some candidates struggled to simplify their initial correct ratio either due to errors in the process of simplifying (not dividing by the same amount on each side) or errors in arithmetic when attempting to simplify. It was uncommon to see answers of 3:2 or 1.5:1. Where incorrect answers were seen these often demonstrated a lack of understanding of the requirement for a ratio with fractions being the most common error, but attempts at the total numbers of animals was also seen.

Question 25

Combining the skills of applying fractions, percentages and ratio in this small problem appeared to be demanding for many students, with many often only being able to work with one of the three skills but not all in a correct way. Calculating $\frac{3}{7}$ of 14 was by far the most common first step shown, earning 1 mark with these students either failing to advance further in the problem-solving process but many then using a correct process to find the number of sweets for Andy and Tina after the first exchange to gain 2 of the 4 marks.
Of the students gaining 2 marks, a large number either stopped or were not able to work with 12.5% using a valid method.

Very few students showed working for every step which often led to marks being unachievable if arithmetic errors occurred. Selecting a specific value to begin working with was more commonly seen than expected, with many multiplying each part of the ratio by 21 from adding the parts of the ratio together or using 100. Of these students, very few were successful due to increased arithmetic errors or decimal values when working with a starting value of 100. Unfortunately, the majority of the cohort gained no marks and this was often due to using 21 rather than 14 when working with $\frac{3}{7}$.

Centres should give more opportunities to students on practicing the best way to approach multi-step problems involving multiple skills, particularly involving ratio, and how to logically organise their calculations.

Question 9

In part (a) learners were asked to use the information provided regarding the total number of stickers in order to complete the bar chart. This was answered correctly by the majority of learners. Where answers were seen that were not fully correct there was often working shown which allowed for the award of part marks. Common errors included reading one of the two given bar heights incorrectly, this was often the bar height for the football players which was sometimes incorrectly given as 16 or 18.

In part (b) learners were asked to give the fraction of the 40 stickers that are stickers of tennis players and to give the fraction in its simplest form. The majority of learners were able to identify the required fraction and correctly simplify this to give the required answer. The most common reason for an incorrect final answer was to either give the unsimplified fraction or where errors were seen in the attempts to simplify the fraction. A small minority gave the fraction of stickers that were football players rather than the fraction that were tennis players.

Part (c) of the question required learners to convert between ratio and fraction notation. The majority of learners were able to correctly complete the conversion. The most common incorrect answer was $\frac{5}{4}$ where learners did not sum the parts of the ratio to obtain the denominator of the fraction.

In part (d) learners were asked to give the ratio $5:4$ in the form $n:1$. This proved challenging for learners with only a minority able to give the correct answer. Some learners made an attempt to write the given ratio in the required form but made errors when attempting to calculate $5 \div 4$, others started the process to divide but did not reach the form $n:1$. Other incorrect responses included 1:0.8 (the form $1:n$) and answers of 1.25 without $n=$ or any attempt to write as a ratio. There were a significant number of incorrect answers of $5:1$ or where n had been introduced into the ratio in some way, for example $5n:4$.

Question 17

Around half of learners were able to make some progress with this question, although only a minority were able to give the decision of 'no' together with correct supporting figures. Where fully correct responses were seen these generally worked from the required ratio for the paint and found the volumes of each paint colour needed to make 24 litres. Some learners made a start to a correct process by finding that $24 \div 8 = 3$ or, having recognised that there were 24 litres of paints that could be mixed, by starting a process to scale down the ratio of the available paints (12:7:5) to compare it to the required ratio (4:3:1). In some cases, learners had made a start to a process, often by showing $12 \div 4 = 3$, or appeared to have come to the correct conclusion, but did not show the figures to support their decision. Incorrect responses often identified that there were 24 litres of paint available to mix and concluded that there was sufficient paint available without considering the required ratio for the green paint. Many got the correct answer of 12:9:3 but then incorrectly stated that they needed more white paint.

Question 9

Success with this familiar style of question on writing figures in a ratio in its simplest form was evident, with many fully correct responses being seen. Most learners correctly showed 90 : 150 and gained the first mark. They usually then tried to simplify it, with varying degrees of success. Some made errors in the simplification, others stopped too early, and others carried on to successfully reach 3 : 5 for full marks. A small number of learners seemed unaware of correct ratio notation and, although some began by writing a correct starting ratio, chose to then write it as a fraction and were then unable to gain any marks.
It was quite rare for learners to write the numbers the wrong way round. Where they did this, they could gain a maximum of 1 mark if they simplified all the way to 5 : 3.

Question 10

Learners responded well to this familiar question of writing two variables as a ratio, with the first mark being awarded for 20 : 80 or any equivalent ratio, and full marks being given if this was correctly simplified to either 1 : 4 or 0.25 : 1 and condoning 1% : 4% but not 0.01 : 0.04 as shown in the additional guidance part of the mark scheme.

Responses with the ratio written the wrong way round scored a maximum of 1 mark but only if cancelled down correctly to reach 4 : 1 or 1 : 0.25. Weaker responses showed confusion by not subtracting the 20% from the total and using ratios such as 20 : 100 which scored no marks. Unfortunately, responses that used equivalent fractions such as $\frac{1}{5}$ or $\frac{1}{4}$, or decimal numbers gained no credit without using a colon to represent ratio notation.

Question 21

Responses to this ratio question were generally very good, with the most successful approach being to divide 6900 by 10 and then to multiply by each of the parts of the ratio and this was commonly seen. Occasionally variations of this were shown, such as recognising that half of the money goes to Musa and then dividing the remainder into the ratio 2:3. These other approaches were given credit but were often contradicted by subsequent incorrect work such as dividing the 6900 by each of 2, 3 and 5 and assigning an amount to an incorrect person instead. This was evidence of incorrect ratio work which often gained no marks.



Examiners' Report
Principal Examiner Feedback

November 2022

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Non-Calculator) Paper 1F

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2022
Publications Code 1MA1_1H_2211_ER
All the material in this publication is copyright
© Pearson Education Ltd 2022

GCSE Mathematics 1MA1
Principal Examiner Feedback – Foundation Paper 1

Introduction

The paper offered an opportunity for students of all abilities to demonstrate their understanding of a variety of mathematical concepts.
The early questions acted as a good confidence building way into the paper, with many students gaining a good proportion of the early marks.

Lack of careful reading of some of the questions was a cause for concern; particular ones are quoted in the summary below. Also worrying is the number of arithmetical errors that featured in many students' work. Simple application of the four rules was found wanting on many occasions. For example, 10000/8 being seen as 8/10000. Students should be encouraged to check working before being totally satisfied with their answers.

Some students were clearly avoiding tackling questions that involved algebraic techniques. These attempted trial-and-error methods from quite early on in the paper, even for the simpler questions where an algebraic approach was straightforward.

The quality of handwriting from some candidates made their responses difficult to read. Students are advised to avoid rushing through their work.

Areas of the curriculum that need more attention are, Geometric reasoning (Q9b), Describing transformations (Q11), Equation of a straight line (Q11bii), Fractions (Q20), Indices (Q21) Comparison of ratios (Q24) and Factorisation of polynomials (Q26b).

Again, it was pleasing to see many students clearly showing their working and utilising their communication skills when required. This continues to be an area of improvement.

Report on individual questions

Question 1. This first question was generally well answered and served as a good introduction to the paper. Correct answers of $\frac{3}{10}$ or $\frac{30}{100}$ were the most common.

Question 2. This question was usually answered correctly although an answer of 6 (3×2) was a common mistake.

Question 3. Another well answered question with few mistakes. It was pleasing to see most able to follow the correct order of operations.

Question 4. Although 10 and/or 12 were seen more often than not, a number of students failed to gain the mark by offering extra, incorrect values. 6 being the most common seen.

Question 5. Many students failed to score in this question by not simplifying the given expression fully. $3w \times 5t$ and $15 \times wt$ were popular partial simplifications gaining no marks.

Question 6. It was very pleasing to see so many students gaining good marks on this multi-step question. The vast majority gaining 2+ marks. In general, marks were lost through not reading the question carefully. Often just one child was considered, or two adults were included. Another common mistake was to omit the cost of petrol while in other cases it was seen as a cost for each person. Poor arithmetic often denied many full marks, mainly with the addition of two child tickets (the only non-integer), or with an inability to line up integers and non-integers successfully in a column addition method. Some gave the total cost of the trip instead of the change.

The standard of presentation of answers was lacking, in some cases, with little structure or order to what they were doing

Question 7. Part (a) was answered well, the vast majority clearly understanding the concept of mode. In part (b) also, understanding of probability scales and probability in general was good. In (ii), some simply added a cross to the probability scale, failing to quote the actual numerical probability; this gained no marks. Some students are still using terms such as unlikely in terms of describing probability.

Question 8. Part (a) was answered well, with very few failing to score the mark. Candidates performed less well in part (b) with many not collecting the like terms of $3n$ and n together as a first step. Many tried to subtract the n from both sides of the equation either resulting in $2n = 24$ (giving $n = 12$) or $3n = 24$ (giving $n = 8$). In this question, students usually scored no marks or full marks. Some used an embedded solution, with mixed success. Many candidates who achieved full marks did not attempt the algebraic approach and instead simply stated that $3 \times 6 + 6 = 24$, with a correct answer on the answer line.

Question 9. Part (a) was well answered with the vast majority subtracting 70 from 360 to get a correct answer of 290°. However, a great many were unable to give a correct reason for this answer in part (b). The most common incorrect explanation related to a circle "having 360°". Students need to be made aware that such an explanation is not acceptable. Many simply explained how they did it, rather than why e.g. "I subtracted 70 from 360". Students should be reminded that a calculation is not a reason.
In this case "angles at a point sum to 360°" or words to that effect is the reason required.
A common incorrect approach was to work with 180° rather than 360°.

Question 10. Most students correctly worked out that 5 was the greatest number of jars of coffee that could be bought for £23 in part (a). In part (b), a large number of candidates lost the mark as they hadn't read the question carefully enough, missing the word "exactly" in reference to the number of jars to be bought at half price. Many realised that Michael could now buy an extra 11th jar but then lost the mark because they answered 'yes' to the question "Is Michael correct?".

Question 11. Whilst many students correctly wrote down the scale factor of 2 in (a)(i), only a very small minority were able to pinpoint the centre of the enlargement in (ii). Many tried to position their centre either in between the two shaded triangles, in the centre of one of the triangles or on one (or two) of the vertices. In some cases, students who were able to draw lines to intersect at the point of enlargement identified it correctly but missed the mark because they also placed 'X' somewhere else on the graph.
In part (b)(i), accurate drawing of the mirror line was good. Whilst lines drawn with a straight edge are preferred, freehand, dotted or dashed lines were acceptable. In part (b)(ii), unfortunately, very few students were able to give the equation of their line. Common incorrect lines drawn were $x = 4$ or $y = 4$, which in some cases allowed a follow through mark if they stated this as their equation for (ii).

Question 12. Again with this multi-step problem in part (a), it was pleasing to see many students gaining good marks, often 2 or more. In this question, students had to find a sixth and 20% of 120 minutes. When performing calculations of this type it is important for students to show their working, eg $120 \div 6$ or $\frac{20}{100} \times 120$ so that credit can be awarded for correct method if errors are made with accuracy. In solving this problem, some students subtracted 50 from 120 to give 70 minutes and used this as the time spent playing badminton. Arithmetic errors were seen far too often from students when subtracting from 120.
In part (b), many ignored the good work they had done in part (a) and explained that Elana did not get to the café on time because she spent 2 hours at the sports centre making it 3.30pm when she left. This part followed through the working and answer in part (a) and the mark awarded if the reason and working were correct for the time given in (a).

Question 13. Part (a) was answered correctly by the majority of students, reading 60 from the bar chart. Part (b) was answered less well when a certain amount of extrapolation was required from the chart. 210 was a common incorrect answer.
In part (c), it was evident that many students weren't able to accurately read data from a composite bar chart, many reading the number of men as 90, women 200 and children 280 in 2020. The method mark here was awarded for sight of 80 (children) or 200 (men + women) used in a ratio. Many gained this mark but failed to score full marks as a result of incorrect values read from the chart. As a result of not reading the questions correctly, some students wrote an answer of 80 (child) : 90 (men) : 110 (women).

Question 14. Greater success was achieved in part (a) of this question by finding the sum of the distance travelled in one hour (54 miles) and the distance travelled in half an hour (27 miles). It was pleasing however, to see many students correctly quoting the equation distance = speed × time to solve this problem, although accuracy was often lost through incorrect use of the units of time. 54 × 90(mins) or 54 × 1.30 were common errors made.
In part (b), very few students were able to correctly convert from centimetres to kilometres. Many gained one mark for using the scale on the map correctly, 25 000 × 6. Credit was then given for a reasonable attempt at the conversion of 150 000 cm to km, usually just dividing by 1000. Most didn't seem to be clear that they had found a measurement in cm by multiplying by 25 000, those who did include units were more likely to be able to convert correctly as they often spotted that they could convert cm to m then m to km.

Question 15. The diagram proved very useful in getting one correct coordinate, for which one mark was awarded, usually $y = 1$, but rarely was a fully correct answer seen. Whilst many students did use the diagram, drawing the correct line segment, it was also rare to see the correct positioning of the required midpoint. This was often seen placed on the y-axis. There were very few instances of candidates using written methods to find the midpoint.

Question 16. Those students who attempted an algebraic solution often picked up good marks, 2 or more, for a correct expression for the perimeter and then equating it to the given value of 52. Simplifying their algebraic expression often proved more difficult and it was not uncommon to see quadratic terms creeping in. Some students assumed all the lengths to be the same and calculated 52/4 gaining no marks.
Some students correctly found the value of x and then failed to answer the question by finding $2x$, the length of DC. Poor arithmetic let many students down in being unable to divide 57 by 6 and hence not being able to achieve the accuracy mark.
Many students did however adopt a trial and improvement approach which usually cost them a great deal of time for little reward.

Question 17. Again, understanding of probability was good and many students gained the full 2 marks in part (a). One mark was awarded for sight of 100 – 30 (= 70) or a correct value for the probability of taking a blue counter. $\frac{3}{4}$ was a common incorrect answer by some of the less able students, assuming there was an equal number of coloured counters. Students should be reminded that expressing a probability as a ratio is not an acceptable form for this answer.
In part (b), the correct answer of 45 was the modal answer, with incorrect methods following no particular pattern. A common incorrect attempt was also to try to share 30 in the ratio 2 : 3.
Part (c) followed through student's answers in (b). Explanations were usually acceptable, such that 25 counters could not be shared equally between red and yellow. It should be noted that just saying '25 can't be divided by 2' gained no credit. Also, students should be aware that any calculations given as evidence in such questions need to be accurate.

Question 18. Many students were unable to make any progress in this question by not reading the question fully and jumping in to either find a half and/or a twelfth of 240 or to divide 240 by 5, then 3 then 2. Those that correctly divided 240 in the ratio 5 : 3 : 2 usually went on to gain good marks. Many scored 3 marks for finding the numbers of cans remaining, 120, 36 and 44 but were then unable to find the required percentage of cola cans remaining. Finding one number as a percentage of another is an area that needs addressing. Those that did find a percentage were often successful by simplifying their fraction of 120/200 to 60/100.

Question 19. The factorising of 500 was usually carried out with the aid of a factor tree diagram, many of which were seen to be fully correct. Failure to gain full marks was usually down to not giving their product of prime factors as powers as requested, often just leaving the factors in a list. Many arithmetical errors in the construction of a factor tree and some misunderstandings in the concept were seen where the sum instead of a product was given. Centres should emphasise here that complete tree diagrams should have each final branch ending in a prime

Question 20. In part (a), those students who dealt with the fractions and whole numbers separately often gained greater success in achieving full marks, although an answer of $3\frac{4}{9}$ was not uncommon.
Although no credit was given for simply converting the mixed numbers to improper fractions, many did so accurately and then were able to convert both to a common denominator with at least one correct numerator to gain one mark. However, the answer following this approach was often left as an improper fraction, $\frac{77}{20}$. Unfortunately, many just added the numerators and the denominators to give an incorrect answer of $\frac{17}{9}$.
Part (b) proved to be a much greater challenge for many students, many tried to concoct means of dividing $2\frac{2}{3}$ by 6 to get $\frac{4}{9}$, a few students however correctly changed $\frac{8}{3}$ to $\frac{24}{9}$ and divided this by 6 to get $\frac{4}{9}$. The most successful approach was $\frac{8}{3} \times \frac{1}{6}$ showing an ability to divide a fraction by a whole number. Some had success by transposing the problem to show that $\frac{4}{9}$ multiplied by 6 is equal to $2\frac{2}{3}$, although $\frac{24}{54}$ was often seen.
Many students seemed to not understand the requirements for this question.

Question 21. It was clear that the rules of indices are known by many students but the application of them was very poor. $(2^{-5} \times 2^{8})$ was often written as 4^3. This had to be carefully marked as 4^3 as a final answer was an acceptable Special Case answer for one mark.
Sometimes 2^{-10} or 2^{16} were seen but rarely both.
Less able students often unsuccessfully tried to evaluate the terms before finding a product or squaring and had little understanding of negative indices. Occasionally 2^3 was seen for the method mark but this was followed by 2^5. Working with negative numbers continues to be a problem with -5+8 being evaluated as 13 or -13. Many worked exclusively with the powers and did not include the base number at all; -5 + 8 = 3 was often seen.

Question 22. It was common to see the digits 128 quoted in the working or in an answer, but rarely was the fully correct answer of 0.00128 seen. Very few seemed to know the rule of finding the product of the numbers and then counting the decimal places in order to position the decimal point. Many used long multiplication techniques, usually to no avail. It was rare to see an answer given in standard form. Method marks were sometimes gained for arithmetic errors in working but with a correctly positioned decimal place.

Question 23. This question was not answered well at all. Sampling techniques were not well understood at this level. Many either multiplied 40 000 by 80 or divided by 15. Attempts to divide 40 000 by 80 often introduced arithmetic errors, some just left 500 as their answer and those that knew to multiply by 15 struggled to do so correctly. Some students tried to work with percentages which rarely gained any credit eg 15%.
Students need to be encouraged to consider the suitability of their answers as some offered answers which were greater than 40 000, the total number of cars produced.

Question 24. Students at this level find the comparing of ratios particularly challenging. The most common error in part (a)(i) was to add the values of *b* in the ratios to give a triple ratio of 1 : 9 : 5 or used some of the numbers in the given ratios and gave an answer of 1 : 3 : 5. Some using a correct common multiple often spoiled their final answer by more arithmetical mistakes. Although (i) was poorly answered many picked up marks for correctly following through with their values for *a*, *b* and *c* in part (ii).
In part (b), few students were able to make significant progress. Those who assigned values to *m*, *n* and *p* were often successful, but this was rare. The substitution of $n = 2m$ into $p = 5n$ was rare also but usually successful when seen. Occasionally answers lost the accuracy mark for an incorrect order of 10 : 1 or for including letters in their final answer, eg. 1n : 10n.

Question 25. This was very poorly answered. The formula and the force both being given meant there was only the need to work out the area by multiplying 4 by 2. Some students still think that when working with area, they need to square the values first before using them to divide into 10 000. Those who correctly worked out the area usually tried to divide 10 000 by 8, for one mark, but often then failed, again through poor arithmetic. Some stated the area as 6 (4 + 2) and therefore gained no credit.

Question 26. There were many trial and improvement attempts to answer part (a) of this question, the majority of which were unsuccessful, however a few did throw up the critical value of 6. Those following an algebraic approach were able to score one mark initially for a correct process to start a solution. Subtracting 3 from both sides was usually successful but multiplying both sides by 2 was often carried out incorrectly by omitting to multiply the 3 by 2 resulting in $5x + 3 > 36$ or $5x + 3 = 36$. A correct first step was often followed by an incorrect second step or no second step at all.
Replacing the inequality by an equality is not penalised but students must remember to replace the inequality for the final answer. Far too often an answer of $x = 6$ was given.
In part (b), the ability to factorise a polynomial was sketchy. Factorisation of the first two terms [eg. $x(x + 10) + 9$] was often seen but this gained no credit.
$(x + 10)(x – 1)$ was also a common incorrect answer seen. Common incorrect answers included $(x + 1x)(x + 9)$ or $(x + 9x)(x + 1)$

Summary

On the evidence of performance on this paper, students need to:

- take greater care when reading the questions. Performance in questions 6, 10b, 12 and 18 in particular was severely affected by this.
- take care when carrying out arithmetic operations and check their working to avoid careless errors.
- write clearly so that correct values quoted are not altered in subsequent working.
- show clear methods of working particularly in basic calculations such as finding fractions or percentages of quantities.
- set their working out clearly, crossing out working that is being replaced.
- be able to convert using metric units of distance.
- be clear on the specific wording required when giving geometric reasoning

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom